



सत्यमेव जयते

INDIAN AGRICULTURAL
RESEARCH INSTITUTE, NEW DELHI

I.A.R.I.6.

GIP NLK—H-3 I.A.R.I.—10-5.55—15,000

THE
ENTOMOLOGICAL
MAGAZINE.

VOL. III.



LONDON :
FREDERICK WESTLEY AND A. H. DAVIS,
STATIONERS'-HALL-COURT ;
WAUGH & INNES, EDINBURGH ; AND W. F. WAKEMAN, DUBLIN.

M DCCC XXXVI.

LONDON:
R. CLAY, PRINTER, BREAD-STREET-HILL.

LIST OF CONTRIBUTORS.

- BENNETT, William, M.E.S., 48, Cannon Street, 416.
B—n, J. 501.
Christy, William, jun. F.L.S. Z.S. M.E.S., Clapham Road, 411.
Davis, A. H., F.L.S. M.E.S., Camberwell, 103, 104.
Doubleday, Edward, M.E.S., Epping, 98, 147, 283, 413, 414, 415.
Edmonds, A. jun. Worcester, 206, 410.
E. N. D. 304, 410, 416, 427.
Engleheart, N. B. Doctors' Commons, 409.
Enock, William, jun. Hay, 415.
Haliday, A. H., M.A., Belfast, 20, 121, 315, 439.
Heysham, T. C. Carlisle, 409, 410.
Ionieus, 176, 376, 460.
Insect Hunter, 305.
Marshall, Thomas, Birmingham, 510, 511.
Metford, Henry, M.R. C.S. 379.
Newman, Edward, F.L.S., Deptford, 12, 408.
Newman, George, jun. Leominster, 416.
Newman, Henry, Leominster, 208.
Richards, Worcester, 410.
Rudd, Rev. G. T., M.A. F.L.S., Yarm, 170, 207.
Rusticus, Godalming, 336.
Shove, G. 407.
Shuckard, W. E., M.E.S., 91.
Stephens, J. F., F.L.S. Z.S. M.E.S. 415.
Swainson, William, F.R.S. L.S. M.E.S., London-Colney, 1.
Thompson, W., F.L.S., Deputy Inspector-General of Hospitals, 85, 275,
370, 452.
Tot, 208.
Trusted, G. 408.
Walker, Francis, F.G.S. L.S., 49, Bedford Square, 57, 94, 159, 178, 182,
217, 341, 405, 412, 465.
Waterhouse, George R., M.E.S., Royal Institution, Liverpool, 412, 496.

EXPLANATION OF THE PLATES.

PLATE XI.—See ART. V.

- Fig. 1. Wing of *Ensina sonchi*.
2. Ditto *Oxyphora Westermanni*.
3. Ditto *Terellia Serratula*.
4. Ditto ditto *Aleiphron*.
5. Ditto ditto *florescentia*.
6. Ditto *Forellia arnicæ*.
7. Ditto *Orellia Wiedemannii*.
8. Ditto *Tephritis cornuta*.
9. Ditto ditto *lappæ*.
10. Ditto ditto *tussilaginis*.
11. Ditto ditto *arctii*.
12. Ditto *Urophora cardui*.
13. Ditto ditto *pungionata*.
14. Ditto ditto *soltstitialis*.
15. Ditto *Acicula lychnidis*.
16. Ditto ditto *discoidea*.
17. Ditto *Sphenella signata*.
18. Ditto *marginata*.
19. Ditto *Urellia radiata*.
20. Ditto *Acicula corniculata*.
21. Ditto ditto *parictina*.
22. Ditto ditto *latieanda*.
23. Ditto ditto *heraclei*.
24. Ditto ditto *leontodontis*.
25. Ditto ditto *hyoscyami*.
26. Ditto ditto *flavicanda*.
27. Ditto ditto *absinthii*.
28. Ditto *Noeeta guttularis*.
29. Ditto *Anomoia Goodii*.
30. Ditto *Euleia onopordinis*.
31. Ditto *Acidia cognata*.
32. Ditto ditto ? *artemisiae*.
33. Ditto ditto ? *Zodi*.

PLATE XII.—See ART. XXIII.

- Fig. 1. *Iphitrichelus Lar.* *Mas.*
2. *Platygaster Catilins*, *Fem.*
3. Thorax of ditto, vertical section, scutel mucronate.
4. *Platygaster cochlearius*, vertical section, scutel produced.
5. Ditto *relutinus*, *Mas*, antenna.
6. Ditto ditto *Fem.*
7. Ditto *Tipula*, *Mas*.
8. Ditto ditto *Fem.* antenna.
9. Ditto ditto thorax, vertical section, scutel mucronate.
10. Ditto *ruficornis*, *Mas*.
11. Ditto ditto thorax, vertical section, scutel fasciculate.
12. Ditto ditto trophi.
13. Abdomen of a male *Platygaster*, beneath.
14. Ditto female ditto.
15. *Platygaster attenuatus*, *Fem.*
16. *Inostemma areolata*, *Fem.*
17. Ditto, vertical section, scutel obtuse.
18. Ditto, antenna.
19. Ditto, ditto *Mas.*
20. Ditto, abdomen, ditto.
21. *Inostemma scrutator*, *Fem.* antenna.

PLATE XIII.—See ART. XXXII.

- Fig. 1. *Telenomus brachialis*, *Fem.*
2. Ditto *Laricis*, *Fem.*
3. Ditto ditto *Mas*, antenna.
4. Ditto *othus*, *Fem.*
5. *Gryon miscellus*, *Mas*.
6. *Baeus seminulum*, *Fem.*
7. *Teleas varicornis*, *Fem.*
8. Ditto *claricornis*, *Fem.*
9. Ditto ditto *Mas*, anteuna.
10. *Xenomerus Ergenna*, *Mas*.
11. *Thoron metallicus*, *Fem.*
12. Ditto ditto *Mas*, antenna.

C O N T E N T S.

	Page
ART. I. On the Series of Nature, and on the Relations of Animals. Remarks occasioned by a Review of the Preliminary Discourse on Natural History. By Edward Swainson, Esq.	1
ART. II. A few Words on the Transformation of Insects. By Edward Newman. Read at the Linnæan Society, April 1, 1834	12
ART. III. Essay on Parasitic Hymenoptera. By A. H. Haliday, M.A. .	20
ART. IV. Discussion on the Luminosity of <i>Fulgora Candelaria</i> , &c. at the Ninety-ninth Monthly Meeting of the Entomological Club	45
ART. V. Descriptions of the British Tephritis. By Francis Walker . .	57
ART. VI. Memoir on the Metamorphosis and Natural History of the <i>Pinnotheres</i> , or Pea-Crabs. By W. Thompson, F.L.S.	85
ART. VII. Insects found on Hampstead Heath. By W. E. Shuckard .	91
ART. VIII. Monographia Chalciditum. By Francis Walker	94
ART. IX. Notes on a Review of Mr. Swainson's Preliminary Discourse on the Study of Natural History. By Edward Doubleday	98
ART. X. List of Entomological Works	100
ART. XI. Varieties	102
ART. XII. Discussion on the Luminosity of <i>Fulgora Candelaria</i> , &c. at the Ninety-ninth Monthly Meeting of the Entomological Club .	105
ART. XIII. Essay on Parasitic Hymenoptera. By A. H. Haliday, M.A. .	121
ART. XIV. Remarks on the Entomology of Epping and its Vicinity. By Edward Doubleday	147
ART. XV. Observations on the British Cynipites. By Francis Walker .	159
ART. XVI. Remarks suggested by a Postscript to the Fifth Volume of Stephens's "Mandibulata." By the Rev. G. T. Rudd	170
ART. XVII. Some Observations on the Structure and Functions of Tubular and Cellular Polypi, and of Asidae. By Joseph Jackson Lister, Esq. F.R.S.	172
ART. XVIII. Notes on various Insects. By Ionicus	176
ART. XIX. Notes on Diptera. By Francis Walker	178
ART. XX. Monographia Chalciditum. By Francis Walker	182
ART. XXI. Varieties	206
ART. XXII. Wanderings in New South Wales, &c., being the Journal of a Naturalist. By George Bennett, Esq. F.L.S.	209
ART. XXIII. On the Species of <i>Platygaster</i> , &c. By Francis Walker .	217
ART. XXIV. Memoir on the Metamorphosis in <i>Porcellana</i> and <i>Por- tunus</i> . By J. V. Thompson, F.L.S. Deputy Inspector-General of Hospitals	275
ART. XXV. A Tour in the Prairies. By the Author of the Sketch Book .	280
ART. XXVI. Remarks on the Entomology of Epping and its Vicinity. By Edward Doubleday	283
ART. XXVII. List of Entomological Works	292
ART. XXVIII. Varieties	304

	Page
ART. XXIX. Wanderings and Ponderings of an Insect Hunter	305
ART. XXX. British Species of the Dipterous Tribe Sphaeroceridae. By A. H. Haliday, M.A.	315
ART. XXXI. Portions of a Letter from the Author of the Letters of Rusticus to Edward Newman	336
ART. XXXII. On the Species of Teleas, &c. By Francis Walker	341
ART. XXXIII. Of the Double Metamorphosis in Macropodia Pha- langium, or Spider-Crab; with Proofs of the Larvae being Zoëa in Gegarcinus hydrodomus, Thelphusa erythropus, Eriphia caribaea, and Grapsus pelagicus. By J. V. Thompson, F.L.S. Deputy Inspector-General of Hospitals	370
ART. XXXIV. Notes on various Insects. By Ionicus	376
ART. XXXV. On the Origin of the Entozoa in the Bodies of Animals. By Henry Metford, M.R.C.S.	379
ART. XXXVI. Notes on the Genus Aphis. By Francis Walker	405
ART. XXXVII. Varieties	407
ART. XXXVIII. Travels through North and South Carolina, Georgia, East and West Florida, &c. By William Bartram	417
ART. XXXIX. Appendix to Captain Sir John Ross's Narrative of his Second Voyage, &c.	427
ART. XL. On the Husk, or Hoose in Cattle. By George Colgate	433
ART. XLI. An Epitome of the British Genera, in the Order Thy- sanoptera, with indications of a few of the Species. By A. H. Haliday, M.A.	439
ART. XLII. Natural History and Metamorphosis of an Anomalous Crustaceous Parasite of Carecinus Mænas, the Sacculina Careini. By J. V. Thompson, F.L.S. Deputy Inspector-General of Hospitals	452
ART. XLIII. Extracts of Letters from C. Darwin, Esq. to Professor Henslow	457
ART. XLIV. Notes on various Insects. By Ionicus	460
ART. XLV. Monographia Chalciditum. By Francis Walker	465
ART. XLVI. A few Observations on the Habits of some Species of Bees. By G. R. Waterhouse, Curator to the Museum of the Royal Institution, Liverpool	496
ART. XLVII. Entomological Notes. By Edward Newman	499
ART. XLVIII. Notes on the Cheese and Bacon-Hoppers, and the Cheese-Mite	501
ART. XLIX. List of Entomological Works	505
ART. L. Varieties	510

*List of Subscribers of Five Copies of this Volume, to whom we
return our most sincere thanks.*

W. BENNETT.	S. HANSON.
J. BEVINGTON.	J. HOYER.
REV. C. S. BIRD.	J. MILNE.
J. S. BOWERBANK.	E. NEWMAN.
J. F. CHRISTY.	G. NEWMAN.
A. H. DAVIS.	W. SWAINSON.
E. DOUBLEDAY.	J. J. WALTON.

E R R A T A.

- Page 16, line 36, *for Tababus read Tabanus.*
19, — 41, *for hough read though.*
20, — 28, *for segmente read segmento.*
21, — 15, *for lavigatum read lævigatum.*
28, — 41, *for læ read alkæ.*
34, — 2, *for juceis read pieceis.*
35, — 7, *for subhylinæ read subhyalinæ.*
37, — 3, *for contermind read contermino.*
44, — 1, *for Piconiger read Piceoniger.*
49, — 21, *for paratetum read paratelum.*
96, — 21, *for cingulata read cingulataæ.*
157, — 23, *for Calionys read Calioxys.*
176, — 17, *for Jonicus read Ionicus.*
180, — 7, *for Zygoneuva read Zygoneura.*
183, — 34, *for parapsides-fere read parapsides fere.*
207, — 15, *for Bombycyda read Bombycidae.*
277, — 6, *for Portinus read Portunus.*
290, — 24, *for King Ouzel read Ring Ouzel.*
297, — 9, and page 298, line 4, *for Gecarcinus read Gegarcinus.*
301, — 24, *for Compte read Comte.*
303, — 12, *for Rupfertafeln read Kupfertafeln.*
309, — 34, *for scabiosa read Scabiosa.*
349, — 7, *for Precedenti read Precedente.*
381, — 40, *for Destoma read Distoma.*
383, — 39, *for Ascans read Ascaris.*
387, — 11, *for Vena read Filaria.*
413, — 18, *for Jalla read Pentatomæ.*

DIRECTIONS TO BINDER FOR PLACING THE PLATES.

PLATE XI.	.	.	.	to face	.	.	p. 57
—	XII.	.	.	—	.	.	217
—	XIII.	.	.	—	.	.	341

THE
ENTOMOLOGICAL MAGAZINE.

APRIL, 1835.

ART. I.—*On the Series of Nature, and on the Relations of Animals. Remarks occasioned by a Review of the Preliminary Discourse on Natural History.* By WILLIAM SWAINSON, Esq.

THE Reviewers having now, in the ordinary phrase, “done their duty,” with my Preliminary Discourse, permit me, through the medium of your valuable pages, to make a few observations upon what has been said of my labours. I may safely appeal, indeed, to your present indulgence; inasmuch as the remarks which follow, in their spirit, are as applicable to the study of Entomology as to any other branch of Zoology; and may, by eliciting others from such of your readers as are versed in the details of our science, tend to advance its best interests. I should wish, moreover, to discuss the questions at issue more as matters of science, than in the ordinary style of answering reviewers. When opinions are fairly and candidly stated, in temperate and courteous language, we cannot doubt that truth is the sole object for which the writer contends; and he is, to say the least, entitled to a calm and conciliatory answer. But when, on the other hand, a reviewer sets out with a dishonest and malicious intention of misrepresenting an author, perverting his meaning, falsifying his statements, and fastening opinions upon him which he has never uttered; when, moreover, from lack of argument, he is obliged to have recourse to jesting, he evidently shows he is neither a lover of

science nor a lover of truth. The two leading scientific journals, the Literary Gazette and the Athenaeum, have given us, on the present occasion, striking examples of these opposite classes of writers; and this, perhaps, is the best test of their relative merits, of the feelings of their respective editors, and the abilities of their coadjutors. The remarks which follow will be chiefly, if not exclusively, directed to the opinions expressed by the writer in the Literary Gazette; the other will be dismissed in a few words.

The chief points at issue are such as every naturalist must be deeply interested in. They are, I. The Scale of Nature, and, II. The Relations of Animals.

The first question will not detain me long, and I give it the priority, in support of my belief that the writer (evidently a good physiologist) has but a very slight, I might add, superficial acquaintance with Zoology; and that he is still less acquainted either with the labours, or the opinions, of the large majority of British naturalists. The principal objections urged against the circular theory of affinities, are, 1. That it leads to "discordance among its divers followers." 2. "To most unnatural deductions to fill up hiatus and gaps." 3. "That the general form or contour of an animal is made a primary distinction."

Now, as to the validity of these objections. 1. If discordance of opinion as to the value of a system is to condemn it, what system that has ever been invented must not, by such a test, be condemned? Let us take that of the *Règne Animal*, of which the writer has such an overweening opinion. It claims to be, and in many parts really is, based upon the mutual connexion of structure with habit. Why then has this system been opposed,—strenuously and successfully opposed,—*on the very same principles of arrangement*, by De Blainville, in the whole Animal Kingdom; by Illiger, in the Quadrupeds and Birds; by Lamarck, in the Invertebrata; by Temmink, Vieillot, Lesson, Latreille, Wagler, and Bonaparte, in Ornithology; and by a host of others of minor note. Here there is a "discordance of opinion" among the followers of *the principles of M. Cuvier*, far, very far greater than what we have had among the advocates of circularity. The truth is, that no system ever given to the world has received so much opposition as that of M. Cuvier; for, although his anatomical facts have

never, for a moment, been questioned by his opponents, they have all differed from him in the *inferences to be drawn from those facts*. The foregoing list substantiates this assertion in its letter and in its spirit. So that, if "discordance" among those who profess to follow the same principles, is to be urged as proof of the unsoundness of those principles, then the system of M. Cuvier is the most objectionable that was ever invented.

2. But there seems to be another strong objection to the circular theory, arising from its advocates being led to "most unnatural deductions to fill up hiatus and gaps. The circular theorists hesitating not to quote from extinct worlds; when it appears to have been an essential condition to those beings, that, in the different eras which succeeded one another, with the usual character of their family, they united the characters of types, which made their appearance at more remote periods."

There appears to me much ambiguity and looseness in this observation. The writer speaks of extinct animals, which, nevertheless, have "the usual character of their family;" meaning, as I presume, their *recent* family. If so, the objection amounts to this,—because *some* of the types or forms of a recent family are found only in a fossil state, therefore we are to take no notice of them in our survey of existing races: we should have, in short, two systems of circles, one for the recent types, and another for the fossil types, of *the same family!* This I presume to be the writer's meaning,—however absurd it may appear,—because he goes on to say that, "with the usual character of their family," these extinct animals "united the characters of types which made their appearance at more remote periods." What these still "more remote types" are, to which *extinct* animals have but a partial connexion, we are not informed. Who has seen them, or heard of them? They are clearly *in nubibus*. They must relate to imaginary animals, created *before all those* whose remains have been discovered! If this inference is not to be drawn from the passage, here fully quoted, I must confess its meaning is utterly past my comprehension. But again, if all those extinct animals which *have* been discovered show us, as the writer himself admits, the "usual character of their family," as seen in the recent types of that family, the logical inference follows, that both belong to

one family group. I must confess, however, that to me the wording of this objection is devoid both of precision and consistency. But as it is far from my wish to pervert the Reviewer's meaning, I shall view the objection in another light; viz. as condemning the introduction, into the circular arrangement, of such forms as more especially belonged to former ages of the world. By what means, therefore, let me ask, has the writer discovered that nature pursued a new set of primary laws,^a in every age or "day" of the creation? If it could be shown that the characters of any races of the fossil quadrupeds were so anomalous as to exclude them from the great tribes or families of living examples,—that their structure set at defiance all those principles of variation with which we are now familiar,—then, indeed, we should have something like presumptive evidence to favour this writer's extraordinary cavil. But a perusal of M. Cuvier's invaluable memoirs on these animals would have satisfied the Reviewer that such anomalies did not occur. And we, "the circular theorists," can assure him we are not behind-hand in the power of assigning nearly all these animals to their legitimate station in the *one* scheme of nature. But if what I have here urged in defence of introducing fossil animals into the natural system will not satisfy the Reviewer, his own authority, M. Cuvier himself, shall cancel his objection. We beg, therefore, he will turn to the first volume of the *Règne Animal*, and he will there discover, doubtless to his no small astonishment, that the extinct genera of *Mastodon*, *Anoplotherium*, *Palcotherium*, and *Lophiodon*, are actually introduced in the natural series, and incorporated with the living species of the *Pachydermes*, as part and parcel of that order: for although, as every Zoological student knows, these genera are all fossil; yet, to use the writer's own words, "they have the usual characters of their *family*"—or rather, *order*. And, accordingly, M. Cuvier introduces them in the true series of *Pachydermata*. Here again the Reviewer, in condemning the circular theorists, condemns alike the *Règne Animal*.

The third objection against the circular theory is, that "the general form or contour of an animal is made a primary distinction;" meaning, I presume, that the *outer* structure of an

* I speak not here of *variation of form*, but of the *principles* upon which that variation of form is regulated.—See my volume, *On the Geography and Classification of Animals*, p. 224.

animal is regarded, upon ordinary occasions, more than the *inner*. And why should it not? Is not the one, in all vertebrated animals, an index to the other? Cannot we decide as accurately,—nay, and with infinitely greater accuracy,—on the station of an animal, (its essential structure, its economy, and its habits,) from its outward form, as the anatomist can do from “the fragment of a bone?” We should be pursuing a day-dream, indeed, if this had not, and could not, be done among us, “by the hand of a master, with perfect ease;” yes, and with a precision, moreover, of which the writer seems not to have the most distant conception. Waving this, however, I beg to inquire from him, whether outward structure is not as much a branch of comparative anatomy as any other? *The study of anatomy, in short, is the study of structure*, and he who despises one part of the study despises it *in toto*. Where knowledge is to be gained by two methods, the one simple, the other difficult, I should always give the preference to that which most facilitates its acquisition. What, in short, are the bill, the wings, the tail, and the feet of birds, but so many parts of their comparative (although external) anatomy? And what other parts so powerfully and strikingly determine and modify the external form? Now these are precisely the characters which both M. Cuvier and myself have chosen as the foundation of our respective ornithological systems; but with this difference, that I have endeavoured to substantiate, by analysis, the system of this variation,^b while not the least attempt has been made to effect any such generalization in the *Règne Animal*. I mention this, not as depreciating that celebrated work, but as one of the many proofs that its illustrious author had neither time nor inclination to study affinities, with the object of discovering the natural series. It is no disparagement to the highest naturalist, that he is obliged, from the boundless extent of our science, to limit his chief attention to some of its parts, and comparatively to neglect others. I have more than once repeated my surprise, that M. Cuvier, occupied with his innumerable inquiries in comparative anatomy, (in itself the study of a life,) should have accomplished so much in Zoology. Nothing can detract from his splendid talents in the former department; but I must confess my belief, in the language of one who well knew his

^b Northern Zoology, Vol. II. The Birds.

powers, that "perhaps no man living has made so little use of his knowledge to construct a natural arrangement."

I had almost passed over another objection, not indeed stated in precise language, but which seems to be urged against us, for laying any stress on the "unusual development of any particular part of the body, as an excessive tail," &c.; for, it is argued, where this development occurs it is not accompanied by a similarity of functions, therefore the character is subordinate or useless. Here the writer seems to be unconscious, that in thus censuring me, he is also condemning M. Cuvier, Geoffroy St. Hiliare, and all the princes of our science. I must, therefore, again entreat he will turn to the Règne Animal, where he will find that M. Cuvier separates the genus *Inuus* from that of *Macacus*, because the latter have tails, and the former none. M. Geoffroy distinguishes *Pithecia* from *Mycetes*, because the tail of one is short, and of the other long and prehensile. *Cebus* again is separated from *Mycetes*, because its long prehensile tail is covered with hair. And as a sixth example, in the very same family, *Callithrix* is detached from *Cebus*, because its long hairy tail is not prehensile! Now it so happens, that all these instances of primary generic characters, drawn from the structure of the tail, occur in a single group of the Règne Animal. If then I have erred upon this point, it is some consolation that the censure of the Reviewer is equally shared between me and M. Cuvier. In selecting this as a subject for condemning the "circular theorists," the critic has been peculiarly unfortunate.

I have ventured to express a belief that the writer is but very slightly acquainted with Zoology, and that he is equally so as to the sentiments of our most leading naturalists. To defend the circular theory, is really now become, as I am afraid your readers will think, a work of supererogation; seeing that all those who, by their writings, stand in the foremost ranks of our native science, have, either directly or indirectly, by advocating or adopting this brilliant discovery of our illustrious countryman, rendered all further defence of this prime article of our creed, *on the score of authority*, quite unnecessary. When we look to the names of MacLeay, Horsfield, Gray, Professor Lindley, Vigors, Stephens, Sir W. Jardine, Selby, Bell, Newman, and Westwood; not to mention such illustrious men as Fries, Agardh, Nees Von Essenbeck, and Isidore

Geoffroy St. Hiliare upon the Continent, our list comprises nearly all the most distinguished naturalists now living. We differ, indeed, among ourselves, as to numerical divisions; but the grand principle being unanimously admitted, *that no group is natural whose affinities are not circular*, will soon bring about a harmony of agreement in the details.

But the time is gone by when even names, illustrious as they may be, can outweigh logical deductions from undisputed facts. If every one, therefore, of the above distinguished Zoologists and Botanists, was to read his recantation, and yet was unable to substitute any other theory, explaining and illustrating the facts of nature as fully as *this* does, their secession would have no influence whatever upon the philosophic naturalist, who will ever give the preference to that system, whatever it may be, which establishes the *greatest uniformity of principle* in the variation and construction of animals. After all, the value of a system is best seen in its details, in its *workings*, and by its realizing our ordinary conceptions on the affinities of nature. It is not abstract theories, however learnedly promulgated or defended, which will ever persuade us that the following is the natural series of animals, although it is so stated in the *Règne Animal*. Nowhere, as Mr. MacLeay truly observes, "do we find inconsistencies so conspicuous as in this series, which is that nevertheless of the most learned comparative anatomist in existence."^c

Cats.	Elephant.
Seals.	Pig.
Opossums.	Horse.
Mice.	Camel.
Hares.	Antelope.
Sloths.	Sea-Cow, (<i>Manatus</i>).
Armadillos.	Whales.
Ducks-bill, (<i>Ornithorhynchus</i> .)	Eagles, &c.

Why will the Reviewer, and similar devotees to the *Règne Animal*, provoke such comparisons from those who rejoice to honour M. Cuvier in his proper sphere?

We now come to the second point of discussion, no less important and interesting than the last, viz. the *resemblances of animals*.

^c See *Horæ Entom.*, p. 271.

With such a very limited knowledge of Zoology as our critic, from what has been said, would seem to possess, I am rather surprised that he should attempt to grapple with questions of the most difficult and abstruse nature; questions, upon which the experience of near thirty years barely enables me, with doubt and difficulty, to venture. Such scruples, however, do not appear in the following *new* definitions of the various resemblances of animals, as thus given and prefaced by our Reviewer. "When Zoology became a philosophic study, the connexion having been traced between form and function, two elements of scientific classification were admitted: but every casual observer may also detect, in the animal kingdom, the repetition, as it were, of certain organs in creatures removed by the other features of their structure far from one another;"—then the Reviewer quotes *my* examples, (without acknowledgment,) as if they were facts, brought forward by *himself*, of analogies. We then have the definitions. "Taking the three terms, *Affinity*, *Analogy*, and *Resemblance*, in the definitions which should belong to them in natural history," our writer defines them in the following words:—

1. "By *affinity*, we would understand functional relation, or a similarity of structure, in which a similarity of function or of habit is implied.

2. "By *analogy*, we would express a repetition of similar structures, where the whole of the functions or habits entailed by that structure are not present; and,

3. "By *resemblance*, we would signify a repetition of structure where function is not implied at all."

To each of these I must call the reader's attention. Definitions are dangerous experiments, and require that every word should be weighed before it is committed to paper.

1. If, as it is urged, affinity can only be applied to two animals having "a similarity of structure, and a similarity of function or of habit," there are very few affinities in the animal world. For, let us only see how this law would act in practice. By this rule there would be no affinity between the Orang-Otang (*Simia satyris*, L.), and the Chimpanzee (*Troglodytes niger*, Geoff.); the former has the facial angle 65, and is destitute of superciliary ridges; the latter has a facial angle of 50, and possesses these ridges: there is not then "a similarity of

structure ;" therefore, according to this law, there is no affinity, as insisted upon by M. Cuvier, between them. These two genera again, according to this rule, can have no affinity with the long-armed Apes or Gibbons (*Hylobates*, Illiger), because they differ from the former both in structure and in habits ; the buttocks of the Gibbons are callous, while those of the Orangs are hairy ; and yet all Zoologists have placed these animals immediately following each other.

But let us test the truth of this proposition in our own branch, Entomology : the *Gonepteryx Rhamni*, Leach, has no "similarity of structure or of habit" with *Eurymus Edusa*, Sw. ; therefore, according to the above canon, they have no affinity with each other. For the same reason, we must be wrong in supposing *Pontia cardamines* is related by affinity to *P. napi*, for their structures are different. But not to multiply further instances, we must be quite wrong in supposing that any one genus can have an affinity with another genus ; because, as no two genera are "similar in structure," by "which a similarity of function or of habit is implied ;" so we must, by following the above rule, confine "affinities" to species, *and to those species only*, where the structures, functions, and habits, are perfectly similar.

2. Next as to *analogy*. By this term, our writer "would express a repetition of similar structure, where the whole of the functions or habits entailed by that structure are not present."

What is this, but to say, in other words, that an animal may have a peculiar structure, and yet be unable to exercise those functions and habits which this very structure implies ?—It would be like two wood-peckers, having a "repetition of a similar structure"—that is, a wedge-shaped bill, stiff tail, and scansorial feet—the one able to use these endowments, the other denied this power ! Is there any such woodpecker known to exist ? Does any such instance of contradiction occur in the feathered creation ? or can the writer point out one solitary example of such an anomaly in the whole animal kingdom ? I feel confident he never could have thought upon his own words, for they directly and palpably assert, that there are animals who have been endowed by the Creator with a peculiar structure, and yet have been denied the power of performing the functions and habits thereunto belonging. Now, if such an animal is an instance of *analogy*, and is not to be found in

the creation, it follows that *analogy*, as defined by our author, no where exists.

3. *Resemblance*, with naturalists, is usually considered as too comprehensive a term to express similitudes; and therefore we divide resemblances into two distinct sorts, viz. that of analogy and affinity, only using the general or generic term, when we are unable, from a deficiency of analysis, to decide upon its specific nature in the case before us. Our critic, however, is of a different opinion, and thinks that it deserves a separate definition. Resemblance he defines as "a repetition of structure, when function is not implied at all."

Now, if this definition be correct, it is a complete denial of what he previously says,—that "Zoology, as a philosophic study, consists in tracing the *connexion between form and function*;" and again in the following paragraph:—Zoology is "a science of structure and of function, and a philosophy founded on the use of parts and the habits of animals; as such, it cannot retrograde." This is most true, but the assertions in the above definition would imply that structure and function are quite independent of each other; and that one may exist, and in the same individual too, without the other; consequently, that there is no solid basis even for his own definition of the "Philosophy of Zoology." If, in cases of *resemblance*, which are innumerable, there is *no connexion* between structure and function, how can they be traced? and what becomes of the philosophy of our science? This definition, in short, reiterates the last, in asserting that nature presents the most outrageous anomalies:—it maintains that two animals may have a "similarity of structure," yet that one of them may not have a single function or habit of the other.

Our author has refrained from bringing forward any facts or examples in support of his first and second propositions, but he quotes those I have given as instances of *analogy*, and he calls them *resemblances*; as proofs, in short, where the structure is unaccompanied by its corresponding function. But upon what authority does he assert this? His, or rather *my* instances of analogy, (p. 254,) are the "Tragopan Pheasant of India, the Horned Screamer of America, and the Unicorn Chatterer of Brazil," all which have horn-shaped protuberances on their heads. But what does the critic, any more than myself, know of the *functions* of these organs? If he, or any one else, can enlighten us upon these points, science will be truly benefited;

but, labouring under this ignorance, are we to say that these peculiarities have no connexion with the habits of the birds? Every thing we know of nature opposes the extravagant idea. Besides, it so happens, that upon *one* of these birds our critic is completely wrong, when he gives it as an instance of "a repetition of structure, when function is not implied at all." The horned screamer of Brazil has a real (spur-shaped) horn upon its front, which is used as a defence, precisely as much as are the horns of the bull or of the antelope. It is *not*, therefore, an instance of what our author calls *resemblance*, because the structure is accompanied by the function. I have instanced this bird as an example of analogy between the genus *Pala-media* and the tribe of *Ruminantia*: both have horns used for the same purposes,—so far there is a *resemblance*; but the one is a bird, and the others are quadrupeds, and this makes the resemblance to be one of *analogy*. In like manner, the horned and bulky *Dynastidæ* are analogous, as Mr. Kirby truly observes, to the same order of quadrupeds, and, consequently, to the same genus of birds. For myself, I know not of one animal in creation which will come under the author's definition, either of *analogy* or *resemblance*.

I think the Reviewer, or at least your readers, will admit I have now given to each of these definitions every attention; without any attempt, knowingly, to pervert the meaning their words would seem to convey. That the novel views contained in the Preliminary Discourse, no less than the undisguised opinions therein contained, would excite dissent and censure, was naturally to be expected; but when dissent is courteously expressed, I am not only willing, but anxious, to excite discussion; for even if I am throughout in error, much good will eventually result by such errors being detected. Posterity will judge whether I am in a day dream; and whether my Reviewer's concluding sentence upon my labours, that "they will not do honour to the progress of Zoological science in this country," is founded on an incapacity for comprehending them, or in immutable truth.

One concluding sentence. Knowing pretty well the sentiments of our leading naturalists, either personally or by their writings, I have naturally been anxious to surmise which of them could be the advocate of such singular opinions. Now there is only *one* among us who adopts, or who advocates, the Binary or Dichotomous system,—who excludes fossil from

living animals,— who has set himself in opposition to the geological views of *Curier*, *Buckland*, and *Conybeare*,— who has criticised *Leach*, *MacLeay*, *Samouelle*; and, on a former occasion, myself. And when, moreover, I trace in your pages, under the signature of D. D., the eccentric opinions contained in the “Philosophy of Zoology,” and the “History of British Animals,” I feel persuaded that all these are but diversified productions of *one pen*. The Dichotomous system, some how or other, is always brought in, as in the present case; for the Reviewer says, “we shall come to the Dichotomous system, which *must be true*, for by the affinities of two beings, the links in the chain of creation are moulded.” True it is that affinities are so marked, but we have seen that these links, which *must differ* in structure, are not what the writer defines to be *affinities*; and that, consequently, if he is correct, there is no chain of creation.

I have alluded to my suspicions as to the author of this review, that our younger students should not be alarmed by perceiving, under a variety of anonymous shapes and signatures, so much stress laid upon “the Dichotomous system;” and thus be frightened from adopting, or examining, any other. I may be wrong in this supposition, but it is strengthened by so many collateral circumstances, that nothing but a public denial on the part of Dr. Fleming will remove this impression. If this is given, I will cheerfully and sincerely acknowledge I have done him temporary injustice;—but his silence must be looked upon as an affirmative.

P. S.—I have neither time nor inclination to notice *the authors* of the other review: its falsehood is best refuted by the volume itself.

January 20, 1835.

W. S.

ART. II.—*A few Words on the Transformation of Insects.*
By EDWARD NEWMAN. *Read at the Linnaean Society,*
April 1, 1834.^a

“In nova fert animus mutatas dicere formas.”

THE metamorphosis of insects has, in all ages, attracted admiration. What can be more wonderful than that an

^a In order to account for the appearance of this article in the Entomological Magazine, after its having been read at the Linnaean Society, it seems necessary

unsightly and voracious worm should pass through a shrouded and death-like sleep, and wake at last a glorious butterfly, to bask in sun-shine, bathe in realms of liquid air, and quaff the heaven-distilled nectar of beauteous flowers! Well might such a miracle be made a poet's theme! Well might those philosophers, on whose minds there dawned, albeit dimly, the great truth of an after life;—well might they imagine their toilsome existence typified in the caterpillar, their descent to the quiet grave in the tomb-like repose of the chrysalis, and the hereafter they sighed for, in the spirit-like resurrection of the happy butterfly;—and, seizing with avidity the idea, well might they designate these aërial creatures by the name of “souls.”

Wonderful indeed is this transformation from one form to another, and wonderful it ever must remain; yet science has offered us an explanation, which, while it fills us with admiration, strips the subject of that paradoxical seeming which led some of our predecessors to suppose that one animal was actually converted into another; science has shown us that the butterfly pre-exists not only in the chrysalis but in the crawling caterpillar.

It is a very general and a very convenient opinion, that an insect is a being having a quadruple existence; that at birth it is an egg; which hatching produces a larva or caterpillar; this becomes a pupa, and finally an imago; from the imago eggs again proceed, and thus the round of existence is complete. This is confessedly a convenient idea, but the possibility of its application is so partial, that definitions drawn from it must be incomplete,—methods founded on it wholly artificial.

When an organized being first exists, it does not, as far as human observation has reached, bear any resemblance to its parent. When an organized being has reached perfection, it precisely resembles its parent. The degrees or steps by which a being mounts to this perfection and similarity to its parent, constitute that which in an insect is termed metamorphosis.

In every organized being there is a tendency in every part of its substance to become unfitted for its functions, and therefore useless. There is in every organized being a tendency to

to state, that the Publishing Committee of that Society thought it unsuitable for publication in the Transactions, and returned it to the author accordingly.—ED.

throw off, discard, or get rid of all parts of its substance which have become useless. Finally, there is a tendency to form or create fresh portions of substance, to supply the place and perform the functions of those portions thus thrown off. In this three-fold disposition is to be found a solution of all those mysterious changes we behold in animals and vegetables. Generally this change of substance is most readily detected in the exterior covering; but in man, the most perfect animal, the only undeniable proof of it is to be found internally even in the bones. Numberless experiments prove that the substance of bones is continually undergoing change; portions are constantly being absorbed, other portions as continually secreted. By these processes certain portions of matter escape to fulfil other ends, while other portions of matter, introduced as nutriment into the stomach or lungs, are mixed with the blood, and rush to supply the place of that abstracted. Matter cannot perish; each created article must endure for ever. Neither is matter afresh created. The mass of matter remains unalterably the same; but to this disposition of matter to change its relative position, thus operating in the substance of organized beings, are to be attributed the shedding of hair in quadrupeds, the moulting of birds, the sloughing of snakes, the extraordinary changes of Amphibia, and the metamorphosis of Insects.

It has just been observed that the bones of man bear more ample testimony to this constant tendency to exchange of substance, than any of his less solid parts; the same may perhaps be said of all vertebrates, although some of them testify it so abundantly in other ways. Now the skeleton, or external covering of annulates, performs, in a great degree, the same part in the animal functions as the skeleton of the vertebrates; the two are not identical but analogous,—they are substitutes for each other.

In all Condylopodes this tendency to exchange of substance induces a full, complete, and often repeated ecdysis, or change of skin. We find the crab and the butterfly undergoing this ecdysis in an equal degree, both as to extent and number of times, but with how different a result!—the crab remains a crab, but it is a crawling grub becomes a butterfly!

Condylopodes divide into four great groups, three of which are again subdivisible into two each. The easiest and most

convenient character for the primary division of annulates is the number of legs.

HEXAPODA have, in their final state, six articulated legs. They have no power to reproduce a leg, if accidentally lost. Two distinct tribes are included in this group :—

TRIBE I.—TETRAPTERA, or *winged insects*.

II.—APTERA, or *wingless insects*.

OCTOPODA have, in all their states, eight articulated legs. They have power to reproduce a leg, if accidentally lost. Two distinct tribes are included in this group :—

TRIBE III.—ARACHNOIDA, or *spiders*.

IV.—ACAROIDA, or *acari*.

ANISOPODA have, in all their states, the number of the legs varying from that of the *Octopoda* to that of the *Myriapoda*. They have power to reproduce a leg, if accidentally lost. Two distinct tribes are included in this group :—

TRIBE V.—MALACOSTRACA, or *crabs, lobsters, and similar shell-fish, with simple legs*.

VI.—ENTOMOSTRACA, *aquatic animals*, somewhat similar, but having legs with branchial appendages.

MYRIAPODA have an indefinite number of legs in their final state; generally more than twenty, but only six in their first state. They have the power to reproduce a leg, if accidentally lost. One tribe only is included in this group :—

TRIBE VII.—MYRIAPODA, or *centipedes*.

Of these seven tribes, the *Tetraptera* offer the most obvious characters in their metamorphosis for farther subdivision. It may be remarked as a singular fact, without applying it to any theory, that the perfect *Aptera* frequently represent the imperfect *Myriapoda*, likewise the perfect *Myriapoda* represent the imperfect *Tetraptera*. The *Tetraptera*, like the *Condyllopoda*, constitute four perfectly distinct groups, three of which are, in like manner, double groups, and the fourth is most heterogeneous in its contents, but from carrying the organs of sense, &c. to greater perfection, superior to the others.

AMORPHA, in which the penultimate state is provided neither with mouth nor organs of locomotion ; consequently it neither eats nor moves, neither does it bear any resemblance to the perfect state. This group contains :—

CLASS I.—LEPIDOPTERA.

II.—DIPTERA.

NECROMORPHA, in which the penultimate state is provided with mouth and organs of locomotion, detached from the body, but so enveloped in a case that it can employ neither. The resemblance, therefore, to the perfect insect is very considerable, excepting in the total want of motion. This group contains :—

CLASS III.—HYMENOPTERA.

IV.—COLEOPTERA.

ISOMORPHA, in which all the stages are active and voracious, and of similar form. This group contains :—

CLASS V.—ORTHOPTERA.

VI.—HEMIPTERA.

ANISOMORPHA, in which appears the Amorphous, Necromorphous, and Isomorphous characters, together with a typical and distinct character. This group is equivalent to :—

CLASS VII.—NEUROPTERA.

The Amorphous insects are divisible into two distinct groups ; one of which is by far more decidedly and essentially amorphous than the other ; and, strange as the assertion may appear, the possession of this character in the extreme is nothing more than an approach to the Necromorphous group, which does not in any degree possess the character. The two groups of Amorphous insects are not limited to the classes *Lepidoptera* and *Diptera*, but are separated by the fact of their possessing, in the penultimate or quiescent state, the last skin of the ante-penultimate, or previous state ; thus,

1. **AMORPHAADERMATA**, which do not retain the skin of the previous state on entering the quiescent state ; which possess a slight power of *motion*, but not of *locomotion* ; which exhibit the site of the wings, legs, antennæ, eyes, &c. *Papilio*, Lin. ; *Sphinx*, Lin. ; *Phalæna*, Lin. ; *Tipula*, *Tababus*, *Asilus*, *Bombilius*, &c., are the leading groups of *Amorpha Adermata*. *Culex* has a

locomotive pupa, and forms, therefore, an aberrant order of this section.

2. AMORPHA DERMATA, which, on assuming the quiescent state, retain the last cuticle of the previous state, which do not exhibit the least trace of the site of the wings, legs, antennæ, or eyes. The sections contain the great orders, for which the genera, *Syrphus*, *Cestrus*, *Musca*, &c. serve as types.

The insects of the last section, possessing, as they certainly do, the extreme character of the *Amorpha*, nevertheless, as has previously been stated, testify a very evident approach to the neighbouring *Necromorpha*; for, when the skull or covering of the quiescent insect is broken, a perfectly Necromorphous form is disclosed; and thus, though nothing could appear more different than the exterior appearance of the two, yet this examination proves that the real difference exists only in the circumstance that one group retains the covering of the previous state longer than the other group. If we select two well-known insects, the flesh-fly (*Musca vomitoria*), and the honey-bee (*Apis mellifica*), we shall find little or no difficulty in tracing the similarity. The grubs or maggots from which these insects proceed are not dissimilar; but the grub of the fly merely ceases to feed, becomes quiescent, and hardens externally, while that of the bee ceases to eat, is walled in its cell by the workers, lines its cell with silk, casts its covering, and becomes quiescent, every limb being distinct, detached, and perfect, but enveloped in a delicately soft and smooth skin, and perfectly motionless. This is the true Necromorphous character. Now the fly, on the contrary, is Amorphous; but if a few days before the perfect insect appears, the hard and apparently inorganic case which covers it is gently opened, we find within a form precisely resembling the Necromorphous form of the bee just described:—thus it appears clear that the so-called pupæ of the bee and the fly are neither substantially nor numerically the same state. Every ecdysis is certainly a transformation; and therefore, calling the imago, as it certainly is, the ultimate state, then the so-called pupa of the bee is the penultimate; and the so-called pupa of the fly the antepenultimate. The difference is thus explained:—the fly, on assuming the perfect state, casts two skins, the bee only one.

In turning to the other section of the *Amorpha*, the *Amorpha Adermata*, the butterflies, moths, and gnats, we find, on examining them in the quiescent state, abundant evidence that we have before us not only organized but animated beings; in these, the grubs, before becoming quiescent, cast their covering in the same manner as the bee; but still unlike that insect, retain two distinct coverings, thus resembling the *Amorpha Dermata*. Both these coverings are cast at the same time; the interior, fine, semi-transparent, and delicately soft, must have been observed by all who have paid any attention to the rearing of *Lepidoptera*. Now the whole of the *Necromorpha*, as far as has yet been ascertained, finally undergo a *single*, and the whole of the *Amorpha*, on the other hand, a *double* ecdysis.

The *Isomorpha*, of which the common cricket is an excellent example, have no quiescent state; neither can we find that they possess any state precisely equivalent to that portion of the lives of the two great groups which we have been comparing. Their whole existence between the egg and the imago, consists of a gradual series of approaches to perfection, and during this interval, copulation certainly, and not improbably reproduction, often takes place. No character is yet known by which the penultimate, antepenultimate, and prior states can be determined.

In the heterogeneous group, *Anisomorpha*, a group in metamorphosis, as in all other characters, equally related to the other three, we find a typical and distinct section in the dragon-flies (*Libellula*, Lin.). These, like the *Isomorpha*, have no quiescent state: their preparatory state is aquatic, active and voracious: when arrived at the period for assuming the imago, they leave the water, and fixing their feet firmly to a slender stick or blade of grass, emerge from a double skin, and fly away. The exterior skin is hard, corneous, and brittle; the interior, soft, fine, and pliable. Even the magnificent wings leave behind them a covering, which, unfolded with great care, will be found to retain an impression of their complicated meshes. The May-fly (*Ephemera*), one of the Anisomorphous insects, has a metamorphosis still more striking, and one that has been deemed anomalous and unaccountable. In the antepenultimate skin it leaves the water, and attaches itself by the legs like the dragon-fly. Its antepenultimate skin then opens

on the back ; the insect emerges and flies away, leaving that one skin only : that beautifully delicate skin which the dragon-fly quits simultaneously with the harder one, being still retained by the May-fly. Here then we have the strange fact of an insect's flying before it reaches the imago ; that is, flying in its penultimate state. In twenty or thirty minutes at the farthest it settles again, casts its skin, and becomes a perfect imago.

It thus appears, that, although until the final ecdysis, no insect arrives at perfection ; yet before that period, even in the state immediately preceding, it may feed, run, and even fly ; or may swim, crawl, barely move, or be without motion, without apparent life, or without apparent organization. It appears that the apparently lifeless or quiescent state may be entered without ecdysis ; that ecdysis itself may be either single or double ; that the states called pupa, in various tribes, are neither substantially nor numerically the same. That comparing those few insects herein noticed, the fly, the bee, the cricket, the dragon-fly, and the May-fly, all of which represent great orders, we shall find it perfectly impossible to apply, if we aim at precision, any other than a numerical denomination to their intermediate states ; and finally, therefore, that insects, like higher animals, have but three eras of existence, the foetal, the adolescent, and the adult.

As to the number of times ecdysis takes place in the life of an insect, little can be said at present, owing to the carelessness and imperfection of our researches ; and on this account it will be found safer to count downwards from the imago, than upwards from the eggs. Although the contrary has been asserted, and perhaps generally believed, it yet remains to be proved that the grubs of *Diptera* and aculeate *Hymenoptera*, undergo any ecdysis until full grown. The order *Tenthredinates*, on the contrary, and the *Lepidoptera*, change very frequently, with some exceptions ; for example, the caterpillar of the great *Sphinx Ligustri* sheds its skin but once.

These various facts, so simple, so obvious, so plain, so completely within the reach of the most cursory observer, proclaim that each variation in the number or manner of ecdysis is but another mode of metamorphosis ; proclaim that metamorphosis, though in annulates, a complete and oft-repeated ecdysis, is but

another instance of that constant loss and reparation of substance which is incident to all organized beings; proclaim the existence of a general uniformity of plan, with which the widest differences, the greatest discrepancies, are not only compatible, but are essential to perfect harmony, are the surest and safest guides to natural arrangement, and serve, like the key-stones of arches, to unite objects before devoid of continuity; proclaim finally the greatness of Him whose will shapes the whole into perfection.

ART. III.—*Essay on Parasitic Hymenoptera.*

By A. H. HALIDAY, M. A.

(Continued from Vol. II., page 468).

Of the Ichneumones Adsciti.

GEN. VI. LEIOPHRON. (Appendix.)

Subgen. I.—PYGOSTOLUS^a.

Palpi labiales 4-articulati, articulo penultimo minutissimo: abdomen subsessile; segmento 1^{mo}. perbreri; ano verticaliter fisso: aculeus linearis deflexus: alarum anticarum areola radialis apicem alae attingens; antica disci remota.

Leiophron (*partim*) N. ab Ess. Act. Acad. IX. 303.
Gen. VI.

Monogr. 43. Gen. VII.

†Sp. 1. L. P. falcatus. Fem. *Testaceus, macula verticis, metathorace, abdominis basi et alarum stigmate fuscis.* (Long. vix. 2 lin.)

Leiophron falcatus. N. ab Ess. Monogr. 44. Sp. 1.

Ab *L. stictico* differre videtur statura plus duplo minore, alarum stigmate fusco, segmente 1^{mo}. abdominis ante tubercula nonnihil producto: siletur etiam punctum fuscum marginis antici thoracis: reliqua ad amussim convenient.

Habitat Germaniam.

Adnot.—*Leiophron clavipes* N. ab Ess. Monogr. 45. Sp. 2, nobis pariter invisus ad proprium subgenus relegandus videtur.

^a *Pygostolus*, a πυξ et στελλω, propter fissuram ani.

Subgen. II.—*ANCYLUS*.^b

Palpi labiales 3-articulati: mesothoracis scutum bisulcum: abdomen subsessile ano incurvato: aculeus incurvatus, brevissimus: alarum antifarum areola radialis apicem alae fere attingens; antica disci contigua.

Leiophron (partim), N. ab Ess. l. l.

Sp. 5. L. A. ater.

* *Leiophron ater. . . N. ab Ess. Monogr. 46. Sp. 3.*
— excrucians Hal. Ent. Mag. II. 461. Sp. 4.

“ *Mas.—Feminæ simillimus abdomine angustiore; antennis longioribus 25-articulatis*” (*i. e. radicula in numerum computata?*)
 “ *demto pedicello totis nigris.*”

“ *Habitat Germaniam.*”

Subgen. III.—*CENTISTES*.^c

Palpi labiales 3-articulati: mesothoracis scutum lavigatum: abdomen subsessile segmento 1^{mo}. longiusculo obconico: aculeus deflexus subulatus: alarum antifarum areola radialis apicem alae fere attingens; antica disci contigua.

Subgen. IV.—*LEIOPHRON*.

Palpi labiales 3-articulati: abdomen plerunque petiolatum; aculeus reconditus: alarum antifarum areola radialis ab apice alae remota, perbrevis, semilunata; stigma latissimum.

Perilitus, Sectio I. (partim). N. ab Ess. Act. Acad. IX. 302.
Monogr. 29.

Adnot.—Periliti dichori ab his differunt præcipue alarum stigmate minore, areola radiali ampliore, metathorace brevi subtruncato, segmento 1^{mo}. arcuato, condylod et petiolo magis discretis; feminæ præterea aculeo linearí exerto: sunt tamen proximi, etsi generice separandi ob discrimen electum palporum, cuius fidem minuit inconstantia quam inter illos animadvertemus.

^b *Ancylus, Αγκυλος*, incurvus, propter aculeum incurvatum.

^c *Centistes*, a Κεντισω, aculeo pungo, propter aculeum subulatum.

^d *Condylus*, *i. e.* Segmenti 1^{mi}. regio inter tuberculas et apicem quæ Gravenhorstio audit pars antica, sono ambiguo et ab usu communi nimis abhorrente.

Genus IV^{um}. *Agathis* et V^{um}. *Bracon*, calidioris cœli alumni, pauculas tantum species nostrata frigora immittunt, quasi exploratum: mox erunt et hæ nobis breviter lustrandæ: interea subgenerum indicia iterum edimus hoc schemate.

GEN. IV. AGATHIS.

Os	{	breve	I. MICRODUS.
		rostriforme	II. AGATHIS. Ex. <i>Ag. malvacearum</i> , Latr.

GEN. V. BRACON.

<i>Alarum posticarum</i>	{	minuta	I. BRACON.
<i>areola brachialis</i>		magna	II. CYANOPTERUS. ^a Ex. <i>Br. flavator</i> , Fabr.

Adnot.—Genera *Stephanus* (*Jurine Hym.* Ord. II. Gen. IV.) et *Plancus* (*Curtis. Ent. Mag.* I. 188. Gen. DXLVIII.), qui Neesio ab Ess. *Hybrizon* audit (*Monogr.* 27. Gen. V.), ambo ni fallor referenda sunt in *Evanias*. Illa vero claudunt seriem *Ichneumonidum Braconoideorum*, N. ab Ess. Etenim *Cælinius*, *Spathius*, *Perilitus*, *Hormius*, *Blacus*, (*Ichneutes* etiam, si conjecturæ fidis) palpis 6-articulatis gaudent, insequitur protenus sectio altera,

Ichneumonidae; *areolæ disci exteriore nullæ completae in aliis anticus*; *abdomine haud penitus incurvati*; *palpis maxillaribus 6-articulatis*.

Ichneumonides Adsciti Linea II. s. Bassi. *N. ab Ess. Berl. Mag. VI.* 200.

Act. Acad. IX.
306.

— *Alysioides*. *N. ab. Ess. Monogr.* 197.

* — *Fam. III. Spinola Ins. Lig.* II. 86.

— *II. . . Latreille Fam. Nat. Dict. Nouv. d'Hist. Nat.*

— *III^{me}. coupe. Latr. Règne Animal. Nouv. Ed. IV.*

Alysiidæ *Stephens's Syst. Cat.* 355.

Animadvertisendum vero dispositionem Generum per Familias et Sectiones l. s. l. exhibitam a Methodi legibus declinare saepius.

* *Cyanopterus, Kuwea πτερα*, propter alas coloratas.

GEN. VII. PERILITUS.

Palpi maxillares 6-, labiales 3-rariūs 2-articulati : caput transversum ; occiput marginatum : mandibulæ forcipatæ : alarum anticarum areola disci antica parum remota, vel incompleta ; posticarum areola brachialis posterior anteriore parum brevior, nervus recurrens exterior nullus : abdomen petiolatum ; aculeus linearis exertus.

**Perilitus . . . N. ab Ess. Act. Acad. IX. 302. Gen. V.*

Monogr. 29. Gen. VI.

Zele (partim) . Curtis, Br. Ent. 415.

Caput oblatum, thoracis latitudine ; occiput marginatum, parum concavum : oculi pilis rarissimis consiti, s. subglabri : ocelli in triangulum : clypeus fere semicircularis, ab epistomate lineâ impressâ, utrinque foveolatâ, discretus : mandibulæ cuneatæ, curvatae, apice bidentes, forcipatae, cum labro os antice claudentes, labrum breve, transversum, margine rotundatum : epipharyngis ligula apicalis attenuata, prostans : maxillæ lobus membranaceus obtusus : palpi maxillares 6-articulati, articulo 1^{mo}. brevi : labii lobus integer obtusus : palpi labiales 3-articulati vel bi-articulati : antennæ graciles, longitudine et articulorum numero variis : thorax oblongus, convexus ; mesothoracis scutum sulculis ordinariis impressum, in ultima specie lævigatum : abdomen ovatum aut lanceolatum, feminis apice compressum ; segmentum primum elongatum, prope medium tuberculatum, basi attenuatum petiolatum ; secundum magnum, sequentia decrescentia : aculeus linearis exertus : pedes graciles : alarum anticarum areola disci antica parum remota, vel cum cubitali-interiore confluens ; brachialis-posterior anteriorem parum superans ; stigma distinctum ; posticarum areola brachialis-posterior ampla, anteriore parum brevior, nervo recurrente apicis recto ; nervus recurrens exterior nullus.

Staturâ et coloribus referunt hi quodammodo *Exetiastes* et *Mesochoros* inter *Ichneumonidas Genuinas*. Quoad cætera vero Genus videtur optime definitum : abdomen vere petiolatum est, accedens in structuram qualem denique in *Ichneumone* et *Cryptos* absolutam vidimus. Ex *Ichneumonidis Adscitis* vix ulli alii cum his confundi queunt, præter *Leiophrontes* e Subgenere 4^{to}. de quibus jam dictum est. *Helcontes pauci* (Subg. *Zele*) abdomine subfalcato et staturâ totâ *Perilitos* quasi simulantes, alarum et petioli ratione habita distingui poterunt ; illis etenim areola disci antica costæ contigua est, et segmentum primum attenuatum

equidem at nullo modo petiolatum, quum tubercula ejusdem ad ipsam basin sita sint. *Periliti* vero siqui propter areolam fere contiguam ad illos accedant, tamen petioli formam Generi propriam retinent. *Blaci* (e Subg. *Ganychoro*) capitis formâ et alis statim agnoscendi sunt.

SUBGENERA.

Alarum anticarum areolæ cubitales { tres : : : I. METEORUS.
duae : : : II. PERILITUS.

Subgen. I.—METEORUS.^f

Alarum anticarum areolæ cubitales tres, 2^{da}. *parva*; *radialis apicem alæ fere attingens*: *abdominis segmentum primum sensim dilatatum*.

*Bracon, Fam. II. Genuini. *N. ab Ess. Berl. Mag.* V. 21.
Perilitus, Sectio II. . . ————— *Act. Acad.* IX. 302.
————— . . ————— *Monogr.* 33.

Palpi maxillares elongati vel mediocres; articulus 1^{mus.} brevissimus, 2^{dus.} illo parum longior, 3^{ius.} longior et crassior cultratus, reliqui lineares e quibus 6^{ius.} 4^{to.} brevior, 5^{to.} vero plerunque longior est. Palpi labiales 3-articulati; articuli longitudine subæquales, 1^{mus.} oboconicus, 2^{dus.} crassior obovatus, 3^{ius.} basi sensim attenuatus.^g

SECTIO A.

Alarum posticarum areolæ radiales 2, mox confusæ; anticarum cubitalis 2^{da}. subquadrata.

N. B. Nervus recurrens ante apicem areolæ cubitalis 1^{ma}. insertus in plurimis: alarum posticarum area radialis a brachiali perparum remota, uti etiam in specie 5^{ta}. et 6^{ta}. in sequentibus manifestius remota.

Sp. 1. P. M. albitalis. Fem. *Rufo-testaceus*, *tarsis posticis albidis*; *aculeo brevi*. (Long. corp 4½; alar. 9 lin.)

Perilitus albitalis. *N. ab Ess. Monogr.* 34. Sp. 7.

Fem.—*Rufo-testaceus*: oculi virides, maximi: epistoma angustum: mandibulæ apice fuscae: palpi prælongi, pallidi: antennæ circiter 43-articulatæ, graciles, corpore longiores, apice obscuriores: metathorax lineolis et rugulis fere obliteratis: abdomen oblongum, falcato-compressum; segmentum 1^{num.} gracile, reliquo abdomine

^f *Meteorus*, Μετεωρός, propter folliculum pupæ pensilem.

^g Oris partes collatae e speciebus 3^{da}. 5^{ta}. 6^{ta}. 7^{ma}. et 13^{ma}.

brevius, a medio in apicem sensim conico-dilatatum, vix aciculatum : aculeus segmento 1^{mo}. non longior, valvulis fuscis : pedes longi graciles, unguicularibus^h fuscis, trochanteribus posterioribus nonnunquam fuscescentibus ; tarsorum posticorum articulo 1^{mo}. apice, 2^{do}. 3^{to}. et 4^{to}. totis albidis : alee longae, lutescentes, nervis fuscis, stigmate luteo, lanceolato ; posticarum areola radialis interior subtiliter designata.

Habitat Germaniam, Galliam (*N. ab Ess.*) Hiberniam borealem, rarus.

Adnot.—Hie sollicite distinguendus ab *Helconte Testaceatore*.

Sp. 2. P. M. albiditarsus. Mas. *Piceus, facie, orbita, abdominis medio pedibusque ferrugineis ; posticis obscurioribus, tarsis albidis.* (Long. corp. 4; alar. 8½ lin.)

Zele albiditarsus . *Curt. B. E. 412. Sp. 4. et Fig.*

Mas.—Caput ferrugineum orbitâ superâ concolore, vertice reliquo piceo : antennæ corpore ½ longiores, circiter 16-articulatae, nigro-fusca subtus dilutiores, scapo et pedicello ferrugineis : palpi prælongi : thorax piceus, scutelli apice et suturis obseurè ferruginosis ; metathorax punctulatus : abdomen piceum, segmento 2^{do}. sordide ferrugineo : segmentum 1^{num}. validum obconicum, basi sulcatum, obsolete aciculatum : pedes anteriores ferruginei, coxis et tarsis pallidioribus ; postici elongati, satis validi, coxis et femoribus ferrugineis aut piceis, trochanteribus pallidis, tibiis piceis basi ferrugineis, tarsis albidis, unguiculari ferrugineo : alee brunneo-hyalinæ, lineolâ hyalinâ obsoletâ, stigmate nervis que brunneis, radice et squamulis ferrugineis : stigma lanceolatum : nervus recurrens insertus solito interiùs : alarum posticarum areole radiales insigniter discrete.

Habitat in Hiberniâ boreali, nobis semel lectus ;—prope Londinum.

J. Curtis.

Sp. 3. P. M. caligatus. *Niger, abdominis segmento 2^{do}. pedibusque rufis ; tibiis tarsisque posticis fuscis, illis basi albidis.* Fem. *Aculeo brevi.* (Long. corp. 2½; alar. 5 lin.)

Fem.—Niger nitidus : antennæ circiter 34-articulatae, corpore parum breviores, teretes, basi subtus piceæ : os ferrugineum : oculi magni : epistoma subquadratum : metathorax obsolete punctatus : abdominis segmentum 1^{num}. validum, obconicum, laeviusculum ;

^h *Unguicularis*, i. e. articulus ultimus tarsorum.

^{2^{da} rufescens, apice nigrum : aculeus $\frac{1}{3}$ abdominis longitudine : pedes rufo-testacei ; anteriores et posticorum trochanteres pallidiores ; posticorum tibiae tarsique fusci, illarum basis perbrevi spatio pallida : ale obscure hyalinae, stigmate nervisque fuscis, radice et squamulis stramineis ; stigma latius quam praecedentibus, ovato-lanceolatum ; areola cubitalis ^{2^{da}, latior quam longior : posticarum areola radialis interior subtiliter designata.}}

Mas.—Antennae longiores; abdominis segmentum 2^{um}, obscurius rufescens.

Habitat Hiberniam borealem; Ebudas insulas, rarer.

Sp. 4. P. M. chlorophthalmus. *Testaceus*; *alarum anticarum nervo recurrente interstitiali*. Mas. *Metathorace et petioli basi fuscis*. Fem. *Petiole sulcato; aculeo fere abdominis longitudine*. (Long. corp. 3½; alar. 6½ lin.)

Perilitus chrysophthalmus, N. ab Ess. Monogr. 35, Sp. 8.

Mas.—Obscure testaceus: oculi virides: antennæ circiter 38-articulatæ, corpore longiores, et colore obscuriores, (scapo et pedicello exceptis,) apice fuscae: pleurae, pectus fere totum et metathorax fuscæ; hic punctato-rugulosus: abdominis segmentum I^{num}. basi fuscum, leviusculum, (forma fere qualis *P. pendulatori*, No. 7.): alæ lutescenti-hyalinæ, nervis fuscescentibus, stigmate luteo, radice et squamulis stramineis: stigma ovato-lanceolatum: areola cubitalis 2^{da}. latior quam longior, apice attenuata, major tamen quam sequentibus; posticarum areola radiales inter se discretæ nervo subtilissimo et plane decolore, non nisi lucis obliquo reflexu et ægre distinguendo; areola cubitalis-interior pari modo indicata.

Fem.—“*Totus testaceus (luteo-ferrugineus) : antennae corpore longiores : abdomen oblongum, petiolus manifeste sulcatus : aculeus fere longitudine abdominis; vel paulo longior secundum Spinolam.*”

N. B. Cave ne cum hoc confundatur *Rogas chlorophthalmus*, (*N. ab Ess.* Monogr. 202, sp. 3.), qui in genus *Helcanta* referendus erit.

Habitat Italiam, Spinola; Germaniam, N. ab. Ess.; Hiberniam borealem, mas mihi semel lectus.

SECTIO B.

Alarum posticarum arcola radialis unica, antistarum cubitalis 2^{da}. transversa; nervus recurrens fere interstitialis.

Conf. P. chlorophthalmus, No. 4.

Sp. 5. P. M. micropterus. *Antennis et pedibus brevibus validis; segmento 1^{mo}. apice parum dilatato lăviusculo; alis parvulis fuscans.* Mas. *Niger pedibus piceis.* Fem. *Antennis revolutis basi, abdominis medio pedibusque piceo-ferrugineis; aculeo abdomine breviore.* (Long. corp. 1½—2½; alar. 2½—4 lin.)

Fem.—Piceus aut niger: caput solito angustius, facie latâ sub-antennis tumidâ, oculis parvis: os piceo-ferrugineum: palpi breves: antennæ longitudine capitâ cum thorace, validæ revolute piceo-ferrugineæ apice nigræ, circiter 24-articulatæ: thorax sub-compressus; metathorax scabriculus: abdominis segmentum 1^{num}. gracile, basi ascendens, arcuatum medio tuberculatum, postice parum dilatatum, fere lăvigatum: abdomen reliquum vel segmentum 2^{dum}. piceum aut sordide ferrugineum, venter compressus apice truncatus: aculeus abdomine brevior: pedes breves validi picco-ferruginei: alæ solito minores angustæ, volando fere inepta, fuscanæ stigmate nervisque piceis, radice et squamulis ferrugincis: areola cubitalis 2^{da}. major quam proxime sequentibus.

Mas.—Niger. ore pedibusque piceis; pedes antici tarsique dilutiores: antennæ corpore paulo breviores, circiter 27-articulatæ, validæ teretes nigræ: alæ paulo majores quam feminæ, sed minores quam reliquis: abdomen lanceolatum apice subcompressum.

Habitat in gramine pascuorum passim non infrequens.

Sp. 6. P. M. abdominalator. *Niger nitidus, abdominis medio pedibusque rufis; alis brunneis, lineolâ hyalinâ; abdominis segmento 1^{mo}. obconico, longitudinaliter striato.* Fem. *Antennis basi rufis; aculeo abdomine breviore.* (Long. corp. 2—2½ lin.; alar. 3½—4½. lin.)

*Bracon abdominalator . N. ab *Ess. Berl. Mag.* V. 24. Sp. 36.

Perilitus abdominalator . N. ab *Ess. Monogr.* 41. Sp. 17.

Fem.—Niger nitidus: antennæ plane filiformes, capite cum thorace longiores, circiter 24-articulatæ, rufæ scapo apiceque fuscis: oculi parvi: os piceum, palpi apice pallidiores: metathorax quam

reliquis manifestius rugoso-reticulatus, lineolâ longitudinali elevatâ : abdominis segmentum primum brevius quam sequentibus, obconicum circa medium tuberculatum, longitudinaliter striatum et basi sulcatum ; 2^{dum} . rufum aut piecum, 3^{dum} . basi nonnihil quam rufescens, reliqua nigra : pedes validi rufi, femoribus et tibiis postieis apice, tarsisque iisdem totis reliquis apice, fusci : alae augustiores quam sequentibus, brunneo-hyalinae lineolâ hyalinâ sub-stigmate brunneo, radice et squamulis ferrugineis ; stigma ovato-lanceolatum ; areola cubitalis 2^{d} . brevis antrosum attenuata.

Var. β.—Pedibus gracilioribus rufis immaculatis ; antennis saepe totis nigris.

Mas.—Caput minus : antennæ corpore longiores teretes, circiter 28-articulatæ, nigræ, vel basi subtus pieceæ : segmentum 2^{dum} . concolor aut piecum, rarius rufum.

Habitat Hiberniam ; in agris passim non infrequens ;—Germaniam, *N. ab Ess.*

Sp. 7. P. M. pendulator. *Testaceus immaculatus*; *vel capite thoraceque fusco variis, metathorace et segmento 1^{mo}.* totis nigricantibus ; segmento 1^{mo}. elongato obconico, subtiliter striato. Fem. *Antennis corporis longitudine;* aculeo abdomen parum breviore. (Long. corp. 2— $2\frac{1}{2}$; alar. $3\frac{3}{4}$ — $5\frac{1}{2}$ lin.)

**Ichneumon rufus*, &c. . *De Geer.* II. 596. t. 44. f. 11—13 ?
(Sed confer *P. chlorophthalmus*, No. 4.)

Ichneumon pendulator . *Latreille*, *Hist. Nat.* XIII. 181.
Sp. 8.

Bracon ictericus . . . *N. ab Ess.* *Berl. Mag.* V. 92.
Sp. 34. t. 2. f. 6.

Zele Ephippium . . . *Curt. B. E.* 415. Sp. 5.

Perilitus ictericus . . . *N. ab Ess.* *Monogr.* 37. Sp. 12.

Antennæ *feminæ* corporis longitudine vel parum breviores, circiter 33-articulatæ, basi summâ vel latius flavescentes ; *maris* longiores : metathorax subtiliter reticulato-rugulosus medio obsoletiûs ; apice nonnihil attenuato-rotundatus, denticulo parvo ad foramen petioli utrinque elevato in varietatibus $\alpha.\beta.\gamma.$, in reliquis obsoletiore : segmentum 1^{mm}. elongato-obconicum, circa medium tuberculatum, longitudinaliter striatum striis quam in *P. abdominali* multo subtilioribus : abdomen illis oblongo-ovatum ; his medio latius, aculeo minus elongato : lca subhyalinae ; stigma

ovato-lanceolatum, sordide luteum rarius infuscatum: nervus recurrens areolæ cubitalis 1^{ma}. apici summo insertus in *Var.* *a.* *β.* *γ.*

Var. a.—*Fem.* flavo-testaceus facie et pedibus dilutioribus, tarsis posticis obscurioribus, stemmatico¹ fuscō: oculi obscure virides: antennae apice fuscescentes.

Var. β.—*Mas* et *Fem.* antennae fuscescentes scapo et pedicello flavescētibus: pectus fuscō-maculatum: thoracis dorsum fuscum, lituris scuti et apice scutelli testaceis; metathorax et segmentum 1^{num}. nigro-fusca: segmenta post 2^{num}. dorso nonnumquam infuscata: tibiæ posticæ apice et tarsi iidem obscuriores.

Var. γ.—*Mas* et *Fem.* his mox thorax totus fuscus, pleuris tantum antice rufescētibus, tum vertex totus fuscus; nonnunquam stigma fuscō-maculatum; iisdem petiolus regulosus potius quam striatus.

Adnot.—Cave ne hanc varietatem confundas cum *P. cinctello*, No. 10, qui differt petiolo longiore, antennis fere filiformibus, metathoracis sculptura et abdominis forma.

Var. δ.—*Fem.* testaceus, stemmatico, antennis basi demitâ, (metathorace) et segmento 1^{mo}. fuscis; femoribus, tibiis digitisque posticis apice obscurioribus.

Mas.—Stigmate fuscō-maculato; tibiis posticis prope basin annulo fuscō.

Var. ε.—*Fem.* obscuriūs testaceus, suturis thoracis fuscis, stigmatis liturâ picetâ.

Var. ζ.—*Mas* his antennæ pedesque validiores; colores mox in castaneum aut picum transcurrunt: alæ fumato-hyalinæ, stigmate maculato; vel obscuriores, hoc picco: stigma quoque sensim dilatatum transitum in *P. obfuscum*, No. 11, innuit.

Pupa in folliculo ovato-attenuato sericeo flavicante inclusa, fili ope a folio pendet: De Geer prodibant larvæ ex erucâ *Zygæne Filipendulae*: foliis *Coryli* appensam vulgo inveniri, et larvis *Crypti Areatoris* obnoxiam esse memorat Cl. Curtis, I. l.^k

Habitat, Galliam, Latreille—Germaniam, *N. ab Ess.*—Succiam, De Geer—Angliam, J. Curtis.—In nemoribus Hiberniæ nobis passim frequens. *Var. ε. ζ.* Mares e ripis Senani allati.

ⁱ *Stemmaticum*, i. e. regio media verticis, sspius triangularis, cui ocelli incident.

^k Folliculos plurimos oblongo-ovatos sericeos candidos filo suspensos prope castra *Lasiocampæ processionæ* Reaumurius vulgo inveniebat (Tom. II. Mem. XI. p. 449.) Ichneumonem ex istis prodiisse narrat absque indicio speciei. Verisimile est Perilitum fore.

Sp. 8. P. M. rubens. *Testaceus immaculatus* : vel capite thoraceque fusco-carinis, metathorace et segmento 1^{mo}. totis nigricantibus ; segmento 1^{mo}, obconico elongato levigatulo. Fem. *Antennis capite cum thorace longioribus* ; aculeo abdomen breviore.

*Bracon rubens . *N. ab Ess. Berl. Mag.* V. 22. Sp. 32? Perilitus rubens . *N. ab Ess. Monogr.* 35. Sp. 10?

Edimus hie suo loco speciem praecedenti valde affinem : latendum vero discriben esse nimis anceps, quum utrius statuta partium inconstans sit. A *P. pendulatore* genuino qualis in nemoribus et hortis ille vulgo obvius sit, discrepant exemplaria in arenis maritimis mihi lecta, hisce notis : colores in utroque mutabiles, in his sordidiores et magis confusi : statuta minor : antennae breviores : mesothoracis sulculi in foveam punctatam latiorem effusi : metathorax confertius rugulosus : petiolus basi et apice, aut fere totus levigatus.

Mas.—Antennae corpore parum longiores.

Var. a.—*Fem.* rufo-testaceus, petiolo obscuriore, antennae apice fuscescentibus ; pedes pallidiores ; ake fumato-hyalinae stigmate sordide luteo.

Var. β.—*Mas* et *Fem.* obscure testaceus, vertice medio, metathorace, segmento 1^{mo}. et posterioribus fuscis.

Var. γ.—*Mas* et *Fem.* fusca orbita, facie, pleurarum et senti lituris et scutelli apice rufescensibus ; pedes sordide lutei, coxis posticis infuscatis.

Habitat in arenis maritimis non infrequens.

Sp. 9. P. M. colon. Fem. *Flavus dorso nigricans* ; orbita, segmenti 2^{di} fascia fusco-bipunctata et stigmate flavis ; petiolo, antennae pedibusque gracilibus ; aculeo $\frac{1}{2}$ abdominis longitudine. (Long. corp. 2 $\frac{1}{4}$; alar. 4 $\frac{1}{2}$ lin.)

Fem.—Statuta tota gracilis ; antennae corpore longiores graciles, circiter 30-articulatae, basi subtus flavescentes : caput nigricans ; orbita obscurius, facies dilutiuss flavescentes : thorax nigricans pectore flavo, apice scutelli et suturis contiguis picco-ferrugineis ; metathorax inaequalis scabriculus : petiolus quam *P. pendulatori* longior et gracilior, subtilissime striatus, nigricans : abdomen breve planum fere rhombicum, levissimum nitidum ; segmentum secundum flavescens puncto laterali fusco, apice determinate

nigricans; sequentia nigricantia; anus et venter flavi; venter ab apice segmenti 2^{di}. subito tumidus, areuatus compressus: pedes elongati graciles pallide flavi, tibiis posticis apice tarisque obscurioribus: alae subhyalinæ, stigmate, radice et squamulis pallide flavis: nervus recurrens areolæ 2^{de} insertus.

Habitat in nemoribus prope Senanum lectus rariūs.

Sp. 10. P. M. cinctellus. Fem. *Nigricans, capite et thorace antice ferrugineo-variis; antennis ante basin, abdominis fascia pedibusque ferrugineis; segmento 1^{mo.} obconico, basi linear-elongato; alis glaucis lineolâ hyalinâ, stigmate maculato; aculeo abdomine breviore.* (Long. corp. vix. 2; alar. 3 lin.)

*Bracon cinctellus . *N. ab Ess. Berl. Mag.* V. 23. Sp. 5.

Perilitus cinctellus . *N. ab Ess. Monogr.* 40. Sp. 15.

Fem.—Caput nigricans, orbita et facie ferrugineis: antennæ circiter 26-articulatæ, corpore breviores, filiformes, ferrugineæ scapo et apice fuscis: thorax antice ferrugineus, lituris dorsi confluentibus, peatore fere toto et metathorace nigricantibus: metathorax granulatus opacus, apice non attenuatus at subtruncatus: abdominis segmentum primum basi magis elongatum quam in *P. pendulatore* et plerisque aliis, fere lineare, laevigatum, apice obconico-dilatatum aciculatum: abdomen planum laevissimum nitidum, brevius et minus compressum quam *P. pendulatori*, nigricans segmento 2^{do.} (apice demto) ferrugineo: pedei pallide ferruginei, genubus posticis fuscescentibus: alae quam *P. abdominalis* dilutiores, stigmate flavo liturâ piceâ.

N. B. *Bracon cinctellus*, (*Spinola Ins. Lig.* II. 135. Sp. 22.,) vix
huc pertinere potest.

Habitat Hiberniam borealem minus frequens.—Germaniam *N. ab Ess.*

Sp. 11. P. M. obfuscatus. Mas. “*Obscurè testaceus, metathorace (thoracis dorso in aliis) nigro; abdomine oblongo-ovato, petiolo obscurore; alis obscure hyalinis, stigmate magno fusco punto albo, &c.*” (Long. corp. 2½ lin.)

*Bracon obfuscatus . *N. ab Ess. Berl. Mag.* V. 22. Sp. 33.

Perilitus obfuscatus . *N. ab Ess. Monogr.* 37. Sp. 11.

Zele thoracicus . . *Curt. B. E.* 415. Sp. 9.

Exemplar femellum ab amico *Curtisio* communicatum *Z. thoracici* nomine adscripto, hue referendum videtur. — Magnitudo *P.*

abdominatoris; caput deest: thorax nigro-fuscus, pleuris antieè, scuti lineolis, scutelli apice sordide rufescentibus: abdomen testaceum, postice fuscum; segmentum 1^{num}. brevius quam speciebus 6^{ta}, et 7^{ma}., fuscum, subtiliter rugulosum: aculeus abdomine brevior: alæ quam precedentibus latiores, hyalinæ, stigmate majore fere trigono, fuso puncto baseos determinate pallido ut in proxime sequentibus.

Habitat prope Londinum lectus.—*J. Curtis.*

Sp. 12. P. M. atrator. “*Picco niger*” (*ore*), “*antennis basi subtus pedibusque ochraceis*” (*ferrugineis*); “*abdominis medio picco, segmento 1^{mo}. elongato obconico; stigmate fuso puncto pallido; aculeo abdomine longiore.*” (Long. corp. 2 $\frac{3}{4}$ lin.)

*Zele Atrator . . . *Curt. B. E.* 415. Sp. 1.

Perilitus Simulator . *N. ab Ess. Monogr.* 41. Sp. 16.

Fem.—“Antennæ corpore breviore, basi subtus ochraceæ: palpi pallide ochracei.” *Curtis, l. l.*—Exemplar a clm^o. auctore nobis transmissum caret capite: corpus nigrum nitidum; abdominis segmentuum 2^{dum}. picum: petiolus qualis in sequentibus plerisque, aciculatus: aculeus longitudine abdominis cum metathorace: pedes ferruginei; posticorum femora supra, tibiae apice tarsiisque obscuriores: alæ fere quales proxime sequentibus.

Habitat Germaniam, *N. ab Ess.*—Angliam, *J. Curtis.*

Sp. 13.—P. M. filator. *Niger nitidus, ore, antennis basi pedibusque ochraceis (ferrugineis); segmento 1^{mo}. basi valde elongato linearis, apice obconico-dilatato; stigmate fuso puncto pallido.* Fem. *Aculeo abdominis longitudinali.* (Long. corp. 2 $\frac{1}{4}$ —2 $\frac{3}{4}$; alar. 4—4 $\frac{3}{4}$ lin.)

Fem.—Niger nitidus: antennæ capite cum thorace longiores, circiter 22-articulatae, graciles filiformes, basi aut latius ferrugineæ: clypeus et os ferruginei: epistoma fuscum: oculi sat magni: metathorax nitidulus, rugulis et lineolis elevatis parum distinctis: segmentum 1^{num}. reliquo abdomine non brevius, basi ultra modum elongatum gracillimum, apice cito dilatatum striolis arcuatis subtiliter exaratum: abdomen ovato-lanceolatum subcompressum, segmento 2^{do}. nonnunquam picco: pedes dilute ochracei aut ferruginei, coxis et genibus posticis saepius obscurioribus: alæ fere sequentium latæ hyalinæ; stigmate trigono fuso, puncto baseos determinate pallido; radice et squamulis stramineis:

nervus recurrens apici summo areolae 1^{ma}. insertus : areola radialis quam in reliquis paulo latior.

Mas.—Antennæ corporis longitudine teretes 28—31-articulatæ, nigrae vel basi obscurius rufescentes.

Habitat in nemoribus passim frequens. *Femina*, locis fungiferis autumno.

Sp. 14.—P. M. delator. Fem. *Niger nitidus, ore, antennis basi subtus pedibusque ferrugineis, posterioribus infuscatis; segmento 1^{mo}. obconico, basi elongato attenuato; stigmate fusco puncto pallido; aculeo longitudine abdominis.* (Long. corp. 1½; alar. 2½ lin.)

Fem. P. filatori. Simillimus at petioli formâ statim distinguendus: petiolus brevior quam *P. cinctello* No. 10, sculpturâ præcedentis: segmentum 2^{dum} piceum: pedes posteriores fuscantes, articulorum basi pallidiore: antennæ graciles 23-articulatæ, basi subtus obscurius ferruginea.

Habitat cum præcedente multo rarior.

Sp. 15.—P. M. vexator. Fem. *Niger nitidus, ore, antennis basi et pedibus ferrugineis; segmento 1^{mo}. obconico, basi elongato attenuato; stigmate latissimo, fusco punto pallido; aculeo longitudine abdominis.*

Præcedentibus duobus iterum simillimus, magnitudine intermedius; stigmatis latitudine ab utroque, petiolo breviore a *P. filatori* insuper, distinguendus: oculi magni: epistoma subtus angustatum, fusco ferrugineum: antennæ 19—20-articulatæ.

Habitat cum præcedentibus rarus.

Sp. 16.—P. M. profligator. Fem. *Niger nitidus, ore, antennis basi pedibusque ferrugineis; abdominis medio piceo; segmento 1^{mo}. obconico antice attenuato; stigmate fusco punto pallido; aculeo longitudine abdominis.*

Fem. P. delatore minor, et illi proximus; differt præcipue collo et metathorace brevioribus, segmento 1^{mo}. versus basin coactato, haud linearis: segmentum 2^{dum}. (nonnunquam basis 1^{mi}. etiam) piceum aut ferruginosum: antennæ breviores, 20—21-articulatæ, ferrugineaæ apice fuscæ: pedes pallide ferruginei immaculati: areola radialis paulo magis oblonga basi angustior.

Habitat ibidem rarus.

Sp. 17.—P. M. jaculator. Fem. *Niger nitidus, pedibus et stigmate juceis; segmento 1^{mo}. obconico; aculeo abdomine longiore.* (Long. corp. 1 $\frac{1}{2}$; alar. 2 $\frac{1}{2}$ lin.)

Fem.—Antennæ corpore breviores, graciles filiformes, 20—22-articulatæ: abdominis segmentum 1^{mm}. subtiliter rugulosum: aculeus corpore paulo brevior: alæ obscure hyalinae, stigmate picco, basi non determinate pallescente, nervis picco-pallidis; areolæ radiali angustiore quam proxime precedentibus.

Habitat in Hibernia boreali infrequens: P. scutellator, *ibid.* 38, Sp. 13.

Obs.—Ad hoc subgenus pertinent etiam, *P. pallidus*, (N. ab Ess. Monogr. 35, Sp. 9,) *P. ruficeps* (*ibid.* 39, Sp. 14,) *P. consimilis* (*ibid.* 42, Sp. 18), et *Bracon cinctellus* (Spinola, Jus. Lig. ii. 133, Sp. 22), *Br. petiolatus* (Spin. *ibid.* 137, Sp. 23), potius *Spathius* esse videtur.

Subgen. II.—PERILITUS.

Alarum anticarum areolæ cubitales duce.

**Bracon.* Fam. II. Heterocl. II. A. N. ab Ess. Berl. Mag. V. 26.

Perilitus. Sectio I. N. ab Ess. Art. Acad. IX. 302.

————— ————— Monogr. 29.

Adnot.—Subgenera plura nominatim instituere dubitavi ob inconstantiam palporum.

SECTIO A.—(DICHORI.)

Areola antica disci completa; radialis ab apice alæ remota: unica species mihi nota accedit staturam Subgeneris 1st. Palpi longitudine mediocres ab illo parum discrepant; maxillarium vero articulus 2^{dus}. 3^{ti}. non est brevior: metathorax brevior est et apice quasi retusus: segmentum 1^{mm}. a medio dilatatum: alarum posticarum areola radialis a brachiali longè remota, ut etiam in sequentibus.

Sp. 18.—P. rutilus. Mas. *Niger, facie, orbita pedibusque obscure ferrugineis.* Fem. *Capite, abdomine postice pedibusque ferrugineis; aculeo abdominis fere longitudine.* (Long. corp. 1 $\frac{1}{2}$ —1 $\frac{3}{4}$; alar. 2 $\frac{3}{4}$ —3 $\frac{1}{4}$ lin.)

* *Bracon rutilus.* N. ab Ess. Berl. Mag. V. 27. Sp. 40.
Perilitus rutilus. N. ab Ess. Monogr. 31. Sp. 3.

Fem.—Caput clare ferrugineum, stemmatico fusco: antennæ corporis longitudine, teretes, 25—26-articulatæ, fuscae scapo ferrugineo:

thorax niger, scuti sulculis postice in foveam punctatam effusis; metathorax punctato-rugulosus: segmentum 1^{num}. reliquo abdomine brevius, gracile medio tuberculatum, dehinc in apicem petiolo plus duplo latius, fere oblongum apice vix dilatatum, subtiliter longitudinaliter aciculatum, nigrum: abdomen oblongo-ovatum, totum vel tantunc postice fusco-ferrugineum: aculeus abdomine parum brevior: pedes clarè ferruginei: alæ subhylinæ, stigmate lutescente, nervis, radice, squamulis pallide fuscis: stigma trigonum: areola radialis elongato-semicordata, alæ apicem nullo modo attingens: nervus recurrens interstitialis.

Mas.—Colore obscurior: antennæ validiores, corpore longiores: abdomen nigro-piceum: pedes obscure ferruginei, tarsis, posticorum etiam coxis basi tibiisque fuscescentibus: alarum stigma nervique fuscescentes.

Habitat Germaniam, *N. ab Ess.*; Hiberniam, minus frequens.

SECTIO B. (SYNCHORI.)

Areola cubitalis-interior cum anticâ disci confluens; radialis semi-cordata ab apice alæ remota. a. *Palpi labiales 3-articulati.*

Sp. 19. *P. brevicollis.* Fem. *Niger, facie, orbita et pedibus ferrugineis; segmento 1^{mo}. obconico; areolâ radiali longiusculâ; aculeo $\frac{1}{2}$ abdominis breviore.* (Long. corp. 1 $\frac{1}{2}$; alar. 3 $\frac{1}{4}$ lin.)

Fem.—Robustior et duplo major *P. cerealium*, staturâ totâ facile distingendus: antennæ 26-articulatae corpore parum breviores, scapo rufescente: orbita, facies, os rufo-ferrugineæ: palpi maxillares mediocres, articulis exterioribus non insigniter brevioribus; labiales 3-articulati, articulis longitudine subequalibus: mesothoracis scuti sulculi effusi in depressionem latam confertim punctatam, lineolâ longitudinali media distinctam; anguli posteriores prope scutelli basin gibbi: metathorax perbrevis, verticaliter truncatus, rugoso-reticulatus: abdominis segmentum 1^{num}. ascendens, multo validius quam sequentibus, obconicum medio tuberculatum, rugulosum angulis apicis longitudinaliter striatis: aculeus $\frac{1}{2}$ abdominis brevior, arcuatus, valvulis fusco-ferrugineis: pedes sordide ferruginei, tarsis, posticorum coxis et tibiarum apice, fuscescentibus: alæ hyalinæ, nervis et stigmate fuscescentibus, radice et squamulis dilutiis: stigma angustius quam *P. rutilo* latè ovato-lanceolatum: areola radialis fere ut in illo, apicem alæ quam stigma propius clausa.

Habitat in Hibernia boreali semel mihi lectus.

Sp. 20. P. conterminus. Mas. *Rufo-testaceus, abdomine postice nigricante; antennis corpore brevioribus.* (Long. corp. 1; alar. 2 lin.)

Perilitus conterminus. *N. ab Ess. Monogr. 32, Sp. 4.*

Caput rufo-testaceum; stemmaticum fuscum: palpi fere quales sequenti, modo maxillarium articulus 1^{mus}. minus abbreviatus; deinde 2^{dus}. 3^{ius}. crescentes: antennae corpore breviores, filiformes, 18—21-articulatae, fuscæ basi rufescentes: thorax rufo-testaceus, scuti sulculis impunctatis: metathorax leviusculus, inæqualis, areis ordinariis ob colorem distinctioribus: segmentum 1^{mus}. gracile, medio tuberculatum, dehinc in apicem lineare, petiolo dimidio latius, vix aciculatum, rufo-testaceum: abdomen ovato-orbiculatum, nigrum antice rufescens: pedes immaculati: alæ fere ut in *P. cerealium*, sed arcuata radialis adhuc minor, quasi semilunata.

Variat corpore fere toto castaneo vel pieco, segmento 1^{mo}. tantum rufo. *De femina* consulendus *N. ab Ess. l. l. conferenda quoque sequentis varietas γ.*

Habitat Germaniam, *N. ab Ess.*; Hiberniam occidentalem; autumno pluries lectus.

Sp. 21. P. secalis. Fem. *Niger, antennis basi, ore, orbita pedibusque ferrugineis; alis hyalinis; aculeo dimidii abdominis longitudine.* (Long. corp. 1½; alar. 3½ lin.)

Ichneumon secalis. *Linn. Fna. Succ. 1641.*

Fem.—Statura *P. cerealium*. Palpi discrepant ab illo; maxillarium articulus 1^{mus}. brevissimus, 3^{ius}. 2^{do}. longior et crassior, 4^{ius}. adhuc longior, 6^{ius}. illo brevior at 5^{to}. paulo longior; labiales 3-articulati, articulus 1^{mus}. obconicus, 2^{dus}. et 3^{ius}. breviores ovati: antennæ 21—25-articulatae, corpore parum breviores filiformes, basi sordide rufescentes: metathorax nitidiusculus vase punctatus: segmentum 1^{mus}. fere ut in illo efformatum, longitudinaliter striatum: pedes ferruginei, coxis posticis basi, tarsis apice fuscis: alæ quam *P. cerealium* ampliores, hyalinæ, nervis et stigmate fuscescentibus, radice et squamulis obscurè stramineis: stigma latè ovato-lanceolatum.

Var. β.—Duplo minor (Long. corp. 1 lin.) antennis 19—20-articulatis.

Var. γ.—Adhuc fere minor, rufo-testaceus, abdomine postice nigricante: antennæ 18-articulatae, apice fuscæ: thoracis dorsum

fusco-nebulosum scuti sulculi impunctati: segmentum 1^{mum}. postice minus dilatatum: huic speciei propior esse videtur quam *P. conterminò*; tamen illius esse feminam vero non est absimile.

Habitat in agris passim haud infrequens; — in Succiæ. — *Linnæus.*

(B.) b.—*Palpi labiales 2-articulati.*

Sp. 22. *P. cerealium*. Mas. *Niger, ore, orbita pedibusque ferrugincis*. Fem. *Capite pedibusque ferrugineis; abdomine postice obscuriùs ferrugineo; aculeo $\frac{1}{2}$ abdominalis longitudine*. (Long. corp. 1—1 $\frac{1}{2}$; alar. 2—3 lin.)

Fem. — *P. rutilo* valde similis: antennæ 20—22-articulatae, corpore paulo breviores filiformes, scapo subtus ferrugineo: caput ferrugineum, stemmatico (nonnunquam margine occipitis) fusco: palpi maxillares breves, articulo 1^{mo}. vix distincto; 2^{da}. longiore quam 3^{to}.; 5^{to}. et 6^{to}. arcte connexis, conjunctim 4^{to}. non longioribus; 6^{to}. conico-attenuato: labiales biarticulati tantum: thorax et segmentum 1^{mum}. quales illi, nigri. Abdomen paulo brevius, apice compressum et truncatum, piceum apice ferruginosum: alæ subhyalinæ stigmate lutescente vel obscuriore, radice et squamulis sordide stramineis nervis fusco-pallidis: stigma latè ovato-lanceolatum: areola radialis quam illi multo brevior, $\frac{1}{2}$ intervalli inter alarum apicem et stigma non occupans, semi-cordata.

Mas. — Antennæ corpore longiores: abdomen ovatum: colores obscuriores.

Habitat in agris passim non infrequens.

Sp. 23. *P. Æthiops*. *Niger alis albidis*. Mas. *Tibiis basi rufo-piceis*. Fem. *Orbita picea; femoribus tibiisque ferrugineis; aculeo $\frac{1}{2}$ abdominalis longitudine*. (Long. corp. 1 $\frac{1}{2}$; alar. 3 $\frac{1}{4}$ lin.)

Mas. — *Perilitus Æthiops*. *N. ab Ess. Monogr. 32, Sp. 5.*

Fem. — *P. secalis* non dissimilis: antennæ corpore vix breviores, 25-articulatae: orbita et os picea: metathorax confertim rugulosoreticulatus: abdominalis segmentum 1^{mum}. quam illi multo latius, medio valide tuberculatum, condylo lato oblongo apice parumper dilatato, longitudinaliter striato: trochanteres apice, femora et tibiæ ferruginei, postici obscuriores; tarsi fuscii: alæ albido-hyalinæ, stigmate nervisque fuscis, radice piceo-straminea, squamulis nigris: stigma ovato-lanceolatum angustius quam *P. secalis*.

Mas.—Totus niger: antennæ corpore $\frac{1}{3}$ longiores, 27—30-articulatae: abdomen ovato-lanceolatum; segmentum 1^{num}. quam *femineæ* multo gracilis: femora antica, vel omnia rufo-picea, basi nigra; tibiae basi, anticae fere totæ, rufo-piceæ: alæ albidae: palpi maxillares; articulus 1^{us}. brevis at distinctus, 5^{us}. et 6^{us}. coniunctim $\frac{1}{3}$ longiores 4^{to.}, 6^{us}. apice attenuatus; labiales tantum biarticulati.

Habitat in arenis maritimis. *Fem.* semel lectus, *Mas* plures.

Var. β.—*Mas* duplo, triplo minor, antennis 24—25-articulatis.

Habitat in agris passim frequens. Germaniæ, N. ab Ess.

SECTIO C.—TANYCHORI.

Arcola cubitalis-interior cum anticâ-disci conflucns; radialis apicem ale fere attingens, cultrata.

Sp. 24. *P. idalius.* Fem. *Ferrugineus*, vertice dorsoque thoracis et abdominis castaneis; antennis basi et pedibus pallidioribus; aculeo brevi. (Long. corp. 1 $\frac{3}{4}$; alar. 3 lin.)

Fem.—A precedentibus differt satis universâ statura: palpi graciles longiusculi, numero et proportione articulorum Subgeneri *Meteoro* fere conformes: caput ferrugineum orbitâ concolore, vertice dilute castaneo: oculi virides: antennæ capite cum thorace parum longiores, 21—23-articulatae, graciles, fuscescentes basi flavo-ferrugineæ: thorax castancus nitidus, pectus ferrugineum; sulci ordinarii obliterati; metathorax levius nitidus, postice lobeolâ mediâ punctulatâ, fuscescens: segmentum primum reliqui abdominis longitudine, gracillum teres, basi punctulatum et fuscescens, postice levigatum, tuberculis pone medium sitis, apice lenissime dilatatum: abdomen ovato-lanceolatum, castaneum anno dilutiore; venter ferrugineus: aculeus $\frac{1}{4}$ abdominis brevior: pedes pallide ferruginei: alæ hyalinæ, stigmata obscuriū, radice et squamulis dilutiū stramineis: nervi picco-straminei, longitudinales-exteriores et brachialis-anterior fere totus decolores: stigma trigonum, angustius quam *P. rutilo*.

Habitat in Quercetis Hiberniæ rarissimè.

Adnot.—In hoc Subgenus præterea referendi videntur, e *Perilitis* Neesianis Sectionis 1^{ma}. *P. terminatus* (Monogr. 30. Sp. 1.) et *P. consuetor* (*ibid.* Sp. 2.); nisi hic forte potius *Leiophron* sit e Subgenere 4^{to.} *P. conjungens* (*ibid.* 33. Sp. 6.) autem mox nobis proferendus erit inter *Alysias*.

GEN. VIII.—BLACUS.

Bracon, Fam. I. Heterocl. II. *N. ab Ess. Berl. Mag.* V. 18.

Palpi maxillares 6-articulati; labiales 3-articulati: caput parrulum subglobosum; occipite marginato abdomen subsessile aut vix subpetiolatum, ventre carinato compresso, ano truncato; aculeo linearis exerto: alarum anticarum areola disci-antica contigua completa; cubitales duæ; brachialis-posterior anteriore multo longior.

Caput subglobosum, thorace non latius ideoque parvulum, quum hic compressus sit et solito angustior: occiput truncatum, marginatum; vertex amplus: ocelli in triangulum: frons ampla, declivis: oculi parvi ovati, pilis subtilissimis raris consiti vel subglabri: facies sub antennis tumida: clypeus linea impressa utrinque foveolata ab epistomate discretus, sat amplius, transversus: labrum transversum, lateribus rotundatum, aut semiovatum, epipharyngis ligula apicali attenuata prostante: mandibulæ cuneatæ, curvatae, apice bidentes, forcipatae, cum labro os antice claudentes: maxillæ lobus membranaceus obtusus: palpi maxillares 6-articulati; articuli 1^{mus.}, 2^{dus.} breves; 3^{tus.} longior crassior cultratus; 4^{tus.} adhuc longior linearis; 6^{tus.} 4^{to.} brevior 5^{to.} vero paulo longior: labii lobus integer obtusus: palpi labiales 3-articulati; articulus 1^{mus.} obconicus; 2^{dus.} brevior, dilatatus apice oblique truncatus; 3^{tus.} basi sensim attenuatus, s. subclavatus: thorax oblongus compressus: mesothoracis sulci ordinarii ante scutellum conniventes: abdomen circiter thoracis longitudine, illo antice multo angustius, postice vel sensim incrassatum vel compressum: venter compressus carinatus; anus truncatus: aculeus linearis exertus: *maris* forceps analis exertus: segmentum 1^{num.} oblongum, tuberculis inter basin et medium, ideo subsessile aut vix subpetiolatum: alarum anticarum stigma distinctum; arcola disci-antica costæ contigua; radialis lata cultrata, apicem alæ fere attingens; cubitales duæ; nervus recurrens prope apicem 1^{ma.} insertus; arcola brachialis-posterior ultra anteriorem valde elongata, apice attenuata; postica-disci parva angusta: alarum posticarum arcola brachialis-posterior oblonga angusta, $\frac{1}{2}$ anterioris longitudine, nervo recurrente apicis recto: nervus recurrens exterior nullus.

Subgenera.

<i>Antennarum articuli</i>	<i>{ mari 19, feminæ 17</i>	<i>II. BLACUS.</i>
	<i>{ plures</i>	<i>I. GANYCHORUS.</i>

Illa Subgenera affinitate multiplici transituque fere continuo congregidentur: Neesius ab Essenbeckio jam pridem collocaverat utrumque serie proxima: miror ideo magis virum oculatissimum vestigia priora mox deseruisse, *Ganychoris* cum *Bracone* relictis, *Blacis* vero in genus proprium constitutis quibuscum *Aphidii* plures consociati sunt.

Subg. I.—*GANYCHORUS*.¹

Antennæ filiformes, articulis pluribus quam 19 in mare, quam 17 in femina. Scutellum apice elevatum. Abdomen clavatum; segmento 1^{mo.} linearis-conico, tuberculis inter medium et basin. Alarum anticarum arcuata disci-antica angulae antica in mare subtruncato: stigma attenuatum. Ungues pectinato-fissiles.

*Bracon, Fam. I. Heterocl. II. A. N. ab Ess. Berl. Mag. V. 18.

Bracon, Sectio I. N. ab Ess. Act. Acad. IX. 303.

— — — — — Monogr. 48.
Blacus, Sectio a. A.H.H. Ent. Mag. I. 262.

*Antennæ feminæ circiter corporis longitudine, filiformes, articulis exterioribus longitudine sensim decessentibus, ultimo rursus longiore; maris longiores et graciliores, articulo unico plerunque auctæ: (oris partes e Sp. 2^{um.} et 3^{ta.}) palpi quam sequentibus longiores et graciliores; maxillarium articuli 1^{mus.} et 2^{dus.} obiter inspecti pro unico accipi possent, ob nexus intimum et colore pallidum, obverso vero maxillæ dorso junetura illorum angularis statim apparebit. Prothorax in collum parvum antice truncatum attenuatus: metathorax subcubicus aut rotundatus, granulatus, areis satis distinctis i. e. dorsali, apicali et lateralibus; area dorsalis fere cordiformis lineolâ longitudinali bipartita: abdomen subclavatum, ventre carinato compresso, ano truncato; a latere visum triangulare; segmentum 1^{num.} oblongum, postice parum dilatatum, rugulosum: segmenta reliqua ante marginem foveolis serie transversâ impressis; 2^{dum.} longius, 7^{num.} minutissimum: pedes longi graciles aut mediocres; calcaria parva subulata: unguiculares anteriores in *femina* insigniter incrassiti: unguis anteriores dilatati pectinato-fissiles; posticorum cuspis elongata, laciniæ inferiores setaceæ inconspicuae: alæ angustiores quam sequentibus; stigma angustissimum trigonum: nervus cubitalis*

¹ *Ganychoris*, Γανυχορης, propter mores.

ex angulo in alae apicem recta ductus: nervi longitudinales-exteriores cito abrupti, unde areola cubitalis-exterior postice incompleta est: parastigma^m in *mare majus*, angulum anticum areolæ disci præsecans; in *femina* non ita: alarum posticarum areola radialis parum remota.

Adnot.—*Bracon lucidator*, (*N. ab Ess. Monogr.* 90, Sp. 3) et *Br. fuscipes* (*ibid.* Sp. 4), ab his genericè separandi sunt.

Sp. 1. B. G. pallipes. *Niger abdominis medio piceo, pedibus pallide ochraceis.* Mas. *Antennis 25-articulatis, pubescentibus, basi ferrugineis; stigmatis apice obscuriore.* Fem. *Antennis circiter 24-articulatis, ferrugineis apice fuscis; stigmate silaceo; aculeo $\frac{1}{4}$ abdominis longitudine.* (Long. corp. plusquam 2; alar. $4\frac{1}{2}$ lin.)

Fem.—*Niger*: os et clypeus obscure ferruginei: palpi pallidiores: antennæ corporis longitudine, 24-, nonnunquam 25-articulatæ, articulis exterioribus minoribus quam in sequente; ferrugineæ scapo, articulis singulis flagelli puncto apicali, 5 aut 6 ultimis totis, fuscis: scutelli apex transversim acute elevatus: metathorax subrotundatus: abdomen subelavatum; sequentum 1^{num}. vix $\frac{1}{3}$ abdominis longitudine, lineare postice sensim dilatatum, tuberculis propius medium quam basin sitis: segmentum 2^{dum}. paulo dilutius piceum: aculeus vix $\frac{1}{4}$ abdominis longitudine: pedes pallide ochrei, unguicularibus saltem anterioribus et unguibus fuscis: alae hyalinæ, stigmate, parastigmate, radice, squamulis silaceis; stigmatis apex fusco-limbatus: nervi fuscopallidi, non-nulli fere decolorantes.

Mas.—Caput oblatius: antennæ corpore longiores confertim pubescentes, articulis exterioribus brevioribus quam sequenti, intus ferruginosæ scapo fusco, apice latius fuscæ: metathorax lenius declivis, obsoletius rugulosus: abdomen lineare apice parum incrassatum: pedes quam *feminæ* longiores graciliores: stigmatis apex et parastigma fuscescentes.

Habitat in lucis umbrosis Angliæ, Hiberniæ, Scotiæ, minus frequens.

Sp. 2. B. G. tripudians. Mas. *Rufo-castaneus, capite anoque fuscis, pedibus silaceis, stigmate ochraceo; antennis 21-articulatis pubescentibus, basi ferrugineis.* Fem. *Niger, abdominis medio piceo, pedibus et stigmate silaceis;*

^m *Parastigma*, punctum callosum, aut anastomosis, qua nervus transversus areolæ brachialis apicem claudens, concurrit cum costâ ante basin stigmatis.

antennis 19-articulatis, ferrugineis apice fuscis; aculeo vix $\frac{1}{3}$ abdominis longitudine. (Long. corp. 1 $\frac{1}{2}$; alar. 3 $\frac{1}{2}$.)

Fem.—Nigro-piceus segmento 2^{do}. abdominis dilutiore: antennæ vix corporis longitudine, ferruginea seapo et apice fuscescentibus: os et clypeus obscure ferruginei: thorax qualis præcedenti: abdomen basi gracilis et postice manifestius incrassatum; segmentum 1^{mum}. vix $\frac{1}{3}$ abdominis longitudine, gracie, fore lineare, tuberculis propriis medium quam basin sitis: pedes graciles silacei unguicularibus saltem anterioribus et ungnibus fuscis: aëa hyalinae stigmate, radice, squamulis silaceis; nervi plerique decolores, nonnulli fusco-pallidi.

Mas.—Rufo-castaneus, capite abdominisque segmentis posterioribus fuscis: os et clypeus ferruginei: antennæ graciliores quam sequenti, pubescentes, fuscae basi ferruginea: prothorax ferrugineus: pectus fuscum: abdomen lineare postice incrassatum: pedes quam *feminæ* longiores graciliores: stigma et parastigma dilute oehracea.

Habitat in salice capræ præsertim, gregarius. In convalle tutâ qua requiescunt aurae, prope rivuli comantes ripas et amena murmura, horis pomeridianis ubi sol aestivus e caelo serenissimo effulgeat, *Blaci tripudiantis* mares innumeri choros vulgo implicant aerios, alternis orbibus, *Chironomorum* modo; spectaculum gratissimum.

Sp. 3. B. G. ruficornis. *Niger, abdominis medio piceo; pedibus ferrugineis; alis subhyalinis, stigmate fuscè basi flavo.* Mas. *Antennis 21-articulatis, fuscis basi rufescenscentibus.* Fem. *antennis 20-articulatis, rufo-ferrugineis apice obscurioribus; aculeo $\frac{1}{3}$ abdominis longitudine.* (Long. 1 $\frac{1}{2}$; alar. 3 $\frac{1}{2}$ lin.)

* *Bracon ruficornis.* N. ab Ess. Berl. Mag. V. 18. Sp. 24.
t. 1. f. 3.

Monogr. 49, Sp. 1.

Fem.—Niger aut nigro-piceus, abdominis segmento 2^{do}. rufo-piceo: os ferrugineum: antennæ longitudine fore corporis, rufo-ferruginea, articulis flagelli singulis puncto apicali; 5 aut 6 ultimis totis, fuscescentibus: scutellum apice angulatum, nec tam acute elevatum quam præcedentibus: metathorax rotundatus nec tam abrupte truncatus quam sequentibus, confertim granulatus: abdomen brevius quam præcedentibus, subclavatum: segmentum 1^{mum}. $\frac{1}{3}$ abdominis longitudine, validius quam illis, sensim parum

dilatatum, leviter canaliculatum, tuberculis prope basin : aculeus segmenti 1^{mi}, longitudine : pedes ferruginei unguicularibus fuscis : alæ fere hyalinae stigmate fusco, hujus basi et parastigmate flavescentibus, radice et squamulis stramineis : nervus cubitalis et nonnulli præterea fuscii, plerique pallidiores.

Mas.—Metathorax rotundato-declivis : abdomen gracilius quam *feminæ*, lineari-clavatum.

Var. β.—*Mas et Fem.*—Corpore rufo-castaneo, capite anoque (non-nunquam metathorace et segmento 1^{mo}.) fuscis.

Var. γ.—Exemplar femellum alterum, parvulum, antennis crassioribus brevioribus, apice non infuscatis, ab amico Curtisio *Spathii minutii* nomine adscripto missum, pro specie distincta inferre vix audeo.

Habitat in nemoribus umbrosis Angliae, Hiberniae, passim, *Var. α* rarior, *β.* frequens ; Germaniae, Italiae, *N. ab Ess.*

Sp. 4. B. G. diversicornis. *Niger, abdominis medio piceo ; pedibus ferrugineis, femoribus posticis fusco-annulatis ; alis obscuris.* *Mas. Antennis 21-articulatis. Fem. Antennis 20-articulatis, fuscis basi rufescensibus ; aculeo $\frac{1}{3}$ abdominis longitudine.* (Long. corp. 1 $\frac{1}{4}$; alar. 2 $\frac{1}{2}$.)

* *Bracon ruficornis* . *Var. β.* *N. ab Ess. Berl. Mag. V. 18.*
Sp. 24.

Bracon diversicornis . . . *N. ab Ess. Monogr. 49, Sp. 2.*

Fem.—Os piceo-ferrugineum : antennæ breviores et validiores quam *B. ruficorni*, articulis exterioribus magis ovatis, fuscae pedicello et articulis 5 aut 6 proximis plerunque rufo-ferrugineis : metathoracis forma intermedia inter illum et sequentem : abdomen pedesque fere ut in hoc : alæ paulo minores quam *B. ruficorni*, brumescentes stigmate nervisque fuscis, radice et squamulis fusco-ferrugineis.

Mas.—Antennæ basi rufescentes, vel fere totæ fuscae : alæ dilutiores quam *feminæ* ; arcuata disci antica angulo tantum leviter præsecto.

Habitat Germaniam, *N. ab Ess. Hiberniam* ; cum præcedente, rariūs.

Sp. 5. B. G. ambulans. *Fem. Niger, abdominis medio piceo ; pedibus ferrugineis, femoribus posticis fusco-annulatis ; alis abbreviatis ; antennis 20-articulatis, rufo-ferrugineis apice fuscis ; aculeo $\frac{1}{3}$ abdominis longitudine.* (Long. corp. 1 $\frac{1}{4}$; alar. 1 $\frac{3}{4}$ lin.)

Fem.—Piconiger, abdominis segmento 2^{do}. rufescente : os et clypeus obscure ferruginei : antennæ articulis exterioribus paulo brevioribus et ultimo majore quam *B. ruficorni*, illi vero quam speciei 4^{ta}. similiores et pari modo pietæ : caput sere rotundato-cubieum in hoc, in reliquis evadit sensim paulo oblatius : metathorax sere cubicus, apice rectâ truncatus, confertim granulatus : abdomen brevius et magis compressum : segmentum 1^{num}. vix $\frac{1}{3}$ abdominis longitudine, validius tuberculis obsoletioribus : pedes breviores, obscurius ferruginei, annullo brunneo ante apicem femorum posticorum : unguiculares omnes et basis coxarum posticarum fusi : alæ parvæ et angustæ, brunnescentes, stigmate nervis que fuscis, radice et squamulis stramineis.

Var. β.—Mesothoracis scuto et scutello ruso-piceis.

Habitat cum præcedentibus rariūs.

Subg. II.—BLACUS.

Antennæ corpore breviores ; maris 19-articulatæ, filiformes ; feminæ 17-articulatæ, apice moniliformes : abdomen compressum, segmenti 1^{mi}. tuberculis prope basin : unguis integri : alæ utriusque sexui pari modo areolatæ ; stigmate trigono.

* Bracon. Fam. I. Heterocl. II. B. N. ab Ess. Berl. Mag. V. 19.

Blacus. Sectio I.	—	Act. Acad.
		IX. 306. Gen. XII.
—	—	Monog. 189.
		Gen. XIV.

Blacus. Sectio b.	—	Hal. Ent. Mag. I.
		262.

Caput saepe oblatius quam in præcedentibus : palpi breves, valdiiores, articulo maxillarium 3^{to}. labialium 2^{do}. insigniūs dilatatis : antennæ feminæ breves validæ, articulis exterioribus valde distinctis subrotundatis, ultimo longiore : prothoracis collum minus attenuatum : thorax vagè punctatus pubescens, sulculis postice concurrentibus punctatis : metathorax subcubicus, apice medio quasi retusus, angulis superis productis ; rugulosus, arcis minus distinctis, lineolâ longitudinali elevatâ : abdominis segmentum 1^{num}. brevius, oblongum, rugulosum, tuberculis prope basin ;

segmenta posteriora magis compressa : pedes validi et breviores : tarsi graciles : unguis haud pectinato-fissiles : alarum stigma trigonum minus attenuatum : areola radialis angustior apice acutius clausa : nervus cubitalis plerisque ultra angulum lenissime subarcuatus. *Maris* antennae quam *feminæ* longiores et graciliores, corpore tamen breviores, filiformes, 19-articulatae : caput oblatius : metathorax obsoletius rugulosus, angulis subdepressis : abdomen gracilis : pedes graciliores : alæ sæpe ampliores.

Adnot.—Character hujus Subgeneris a meipso olim exhibitus *l. c.* nonnihil depravatus est, Sectionem B. tantum referens quoad alas.

Adnot.—*Blaci* Neesiani e Sectione secundâ (*Act. Acad.* IX. 306. Monogr. 192), nobis *Aphidii* sunt e Subgenere primo (*Praon. Ent. Mag.* I. 483). Ibidem collocabat et ipse Neesius quondam Speciem unicum in *Actis Berolinensisibus* editam (*Bracon exoletus*, *Berl. Mag.* V. 30, Sp. 47). In *Actis Academicæ* vero et *Monographiâ*, Species congeneres in Sectionem Blacorum conscripsit, illâ nihilominus in locum antiquiore relatâ ; quam verisimile est *clm°*. auctori non diutius adfuisse, quum characterem e priore opere ne verbo quidem immutatum reddidit.

To be continued.

ART. IV.—*Discussion on the Luminosity of Fulgora Candelaria, &c., at the Ninety-ninth Monthly Meeting of the Entomological Club.* (Mr. DAVIS in the Chair.)

MR. DAVIS. — Gentlemen, the present highly respectable meeting of the friends of the Entomological Magazine,—for I see several amongst us who are not members of the club,—has been convened for the purpose of considering the propriety of altering the figure which appears on the wrapper, and in the title page of the Magazine. It has recently been asserted that the insects of the genus *Fulgora* are not luminous. The whole evidence in favour of the luminosity of *Fulgoræ* is summed up in the “Introduction to Entomology, by Kirby and Spence;” a work of which I scarcely know how to speak in terms of sufficient praise. I will, with your permission, gentlemen,

read the whole passage :—“ A genus, in the order *Hemiptera*, called *Fulgora*, includes several species, which emit so powerful a light, as to have obtained, in English, the generic appellation of *lantern flies*. Two of the most conspicuous of this tribe are the *F. laternaria* and *F. candelaria*; the former a native of South America, the latter of China. Both, as indeed is the case with the whole genus, have the material which diffuses their light included in a hollow subtransparent projection of the head. In *F. candelaria* this projection is of a subcylindrical shape, recurved at the apex, above an inch in length, and the thickness of a small quill. We may easily conceive, as travellers assure us, that trees studded with multitudes of these living sparks, some at rest, and others in motion, must, at night, have a superlatively splendid appearance. In *F. laternaria*, which is an insect two or three inches long, the snout is much larger and broader, and more of an oval shape, and sheds a light, the brilliancy of which transcends that of any other luminous insect. Madame Merian informs us, that the first discovery which she made of this property caused her no small alarm. The Indians had brought her several of these insects, which, by day-light, exhibited no extraordinary appearance; and she inclosed them in a box until she should have an opportunity of drawing them, placing it upon a table in her lodging-room. In the middle of the night, the confined insects made such a noise as to awaken her, and she opened the box, the inside of which, to her great astonishment, appeared all in a blaze; and in her fright letting it fall, she was not less surprised to see each of these insects apparently on fire. She soon, however, divined the cause of this unexpected phenomenon, and reinclosed her brilliant guests in their place of confinement. She adds, that the light of one of these *Fulgoræ* is sufficiently bright to read a newspaper by; and though the tale of her having drawn one of these insects by its own light is without foundation, she doubtless might have done so if she had chosen. Another species is figured by Donovan, in his *Insects of India*, of which the light, though from a smaller snout than that of *F. laternaria*, must assume a more splendid and striking appearance, the projecting part being of a rich deep purple, from the base to near the apex, which is of a fine transparent scarlet; and these tints will, of course, be imparted to the transmitted light.” The passage

you will find in the Second Volume, p. 413. The veracity of the authority of the Introduction to Entomology stands so unimpeachably high, that it seems scarcely necessary for me to say, that on a reference to Madame Merian's Insects of Surinam, I find the abstract here given perfectly correct. Neither need I repeat to you, that the wood-cut on the wrapper of the Magazine represents *Fulgora candelaria*, the fire-fly or lantern-fly of China.

Before entering on the discussion of the abstract fact of the luminosity of *Fulgora*, I think it necessary to express my opinion as to the course we should adopt on its termination. I would beg briefly then to state, that if the non-luminosity of the *Fulgora* be positively proved, it is incumbent on us at once to deprive it of its rays, which must tend to mislead; and at an early opportunity we must again meet, and consider the propriety of removing it altogether from its present situation, and substituting some other insect in its place. Mr. Doubleday has a motion on the subject, which he will now read to you.

MR. DOUBLEDAY.—I beg to move, “That the representation of *Fulgora candelaria*, which appears on the wrapper of the Entomological Magazine, be forthwith deprived of the radii intended to indicate luminosity, and that the motto, signifying ‘allow me to illuminate the world,’ be henceforth omitted.”

Mr. Chairman, I have to thank you for the impartial manner in which this subject has been introduced. Nothing could have laid the subject so fairly before us as the passage you have read. I now call your attention to the leading fact in that passage; viz. that the species *laternaria* is the only species concerning which there is any evidence as to its luminosity, and this evidence is that of Madame Merian, an authoress who has been detected, over and over again, in the most gross miststatements. Witness that remarkable one lately pointed out by Mr. MacLeay, concerning *Mygale avicularia*, which was supposed, on the sole authority of Madame Merian, to kill birds, having first entangled them in its web; a more fabulous story than which the history of gnomes and fairies cannot boast. In the instance before us, Madame Merian gravely tells us, that the *Fulgoræ* are produced from the great *Cicadæ*; so much for her accuracy! But I will trouble you to refer to the note at the bottom of the page which you have

been reading; it runs thus:—"It is necessary to state, that not only have several of the inhabitants of Cayenne, according to the French Dictionnaire d'Histoire Naturelle, denied that this insect shines, in which denial they are joined by M. Richard, who reared the species; but the learned and accurate Count Hoffmannsegg informs us, that his insect collector, Sieber, a practised entomologist of thirty years' standing, and who, when in the Brazils for some years, took many specimens, affirms, that he never saw a single one in the least luminous."

The passage, however, relates a remarkable circumstance, which induces me to quote it, namely, that not only *Fulgoræ*, but the large *Cicadæ*, of the South of France, when dead, become phosphorescent. By the way, you will find the passage in the Encyclopédie Méthodique, Article *Fulgore*, not in the Nouvelle Dictionnaire:—"Après avoir cependant questionné quelques naturalistes qui ont habité les colonies, touchant cette Fulgore qui pouvoit produire une matière phosphorique aussi lumineuse, ils nous ont dit n'avoir jamais pu s'appercevoir que cet insecte eût cette propriété; et peut-être doit-il être encore permis de conserver quelque doute sur la vérité du fait.—M. Richard, naturaliste du roi, a élevé à Cayenne plusieurs espèces de Fulgores, et entr'autres celle dont parle Mérian, sans qu'il ait pu découvrir quelque trace lumineuse sur le corps de ces insectes. Quoi qu'il en soit Réaumur nous apprend qu'ayant eu la curiosité de voir l'intérieur de la vessie de cette Fulgore, il n'y vit qu'un cavité considérable, renfermée par un cartilage médiocrement épais. Quand on supposeroit que les substances qui y étoient lorsque l'animal vivoit, s'étoient desséchées, elles n'auroient jamais pu remplir, lors même qu'elles étoient molles, qu'une petite partie de cette cavité. Se résoudroient-elles en phosphore après la mort de l'insecte, et produiroient-elles alors la lumière qui le fait distinguer? Ce qui peut venir à l'appui de cette conjecture, c'est que j'ai souvent trouvé, au midi de la France, de grandes espèces de Cigales entièrement phosphoriques après leur mort." Here is the antidote with the poison, *three* respectable and accredited witnesses against one notoriously inaccurate one.

I may remark, that the structure and economy of the *Fulgoræ* leads me forcibly to suspect that they are diurnal and

not nocturnal insects; and this being the case, what would be the use of their lights? I shall now proceed to prove, by most unexceptionable witnesses, that the English glow-worm, *Lampyris*, and cognate genera, are the fire-flies of the old continent; and that these, together with *Elater*, and cognate genera, are the fire-flies of the new; leaving the *Fulgora* to be the fire-fly of poets and painters only. It is unknown except in fiction, therefore let fiction alone retain it.

“Pictoribus atque poetis
Quidlibet audendi semper fuit æqua potestas
Scimus.”

Does it not become us then to discard a fictitious emblem from a work whose false steps are recorded with anxious accuracy? Beginning with the Old World, our little island, cold though it be, has its fire-fly. The glow-worm is the only representative which we boast of this night-cheering insect, and the luminosity appears to be, in our species, almost confined to one sex, the lady lighting up the beacon of love; the male, however, is not without its tiny lamps, two minute phosphorescent spots appearing on the under side of the *paratetum*. I have a specimen now living, which has been reared from the egg, by my friend Rogerson, of the Greenwich Observatory. It is seldom, in this country, that we have the satisfaction of seeing this insect on the wing, but instances have occurred. At Llanhowel, in South Wales, a resident observer has several times had transitory glimpses of these wandering lights, which might have passed for *ignes fatui*, but that they flew to his reading lamp, and proved themselves corporeal. France, Spain, Italy, and Turkey, have their *luccioli* in abundance. A friend of mine, resident for some years near the Bay of Naples, describes their appearance as superlatively beautiful on a summer's eve. He observed, that when the air was heavy with the *bruma del mare*, they ceased to fly, and settled on the olives and other shrubs, from which he delighted in shaking them, and causing a shower of fire, like the golden rain of an exploded rocket. The oriental Forbes noticed them at Rome. “I have seen them,” says he, “produce a fine effect in the dark recesses of the majestic Coliseum, and illumine the garden of the Villa Medici. On the banks of the Arno they add much to the beauty of a Tuscan evening.” The same author remarked them again in India,

and here his evidence is invaluable, because he, a naturalist, expressly declares the *fire-fly of India* (mark that, gentlemen,) to be a *Lampyris*, and not a *Fulgora*. "While sitting," says Forbes, "at his tent-door after supper, reviewing his late negotiations at Poonah, he perceived the dark side of the grove illuminated by thousands of fire-flies flitting among the branches, and shining with a brilliancy of which the faint light of the European glow-worm gives but little idea. Those who have travelled in Italy during the summer months, and have there seen the *Lampyris*, or *Lucciola*, although not so numerous as in the Asiatic woods, can easily conceive the nocturnal splendour of these insects in the torrid zone." And in another place,— "Especially the *Lampyris*, or fire-flies, which glitter by thousands in the dark recesses of the banian tree, and in perpetual motion on the extremities of the feathery branches of the gracefully waving tamarind, produce a singular and brilliant effect." The female of these appears to be generally without wings, like our own glow-worm. I recollect Mrs. Heber, in her narrative of the Bishop's tour in Ceylon, after elegantly describing the wandering fire-flies, she says, "I also saw glow-worms on the ground, just like our English ones, but larger, and more brilliant." These were evidently the females of the flying ones, which entered her palanquin, and made her start every time they lighted on her muslin dress. This reminds me of the tasteful practice in the East, of the swains adorning their favourite ladies with these shining creatures, which, Smith says, is also done in Italy.

But I am dwelling too long on the *Old World*, which is to me a weary world; my hopes, and wishes, and thoughts, are turned entirely on the *New*, where primæval forests wave their glorious arms, and mighty rivers, broad as seas, pour their resistless waters into the Atlantic. America, thou country of my dreams, when shall I see thee?

"O that *thy* deserts were my dwelling place!"

The fire-flies of America are both *Lampyrites* and *Elaterites*; the latter are the most brilliant, and in the greatest abundance. No writer on that lovely country has forgotten to mention them. Prince Maximilian, in his Brazil, does not, as far as I recollect, once mention the *Fulgoræ*; but he continually alludes to the brilliancy of the fire-flies, and always adds,

Lampyris, Elater. A writer, in a recent number of Blackwood's Magazine, who has evidently seen what he describes, alludes pointedly to the *Elater*. He says,—“I could not but admire the thousands and tens of thousands of fire-flies that spangled the gulf below, a tiny galaxy; they did not twinkle promiscuously, but seemed to emit their small green light by signals, beginning at the head of the ravine, and glaring all the way down in a wavy, continuous, lambent flash, every fly, as it were, taking the time from its neighbour a-head; then for a moment all would be dark, until the stream of sparkles flowed down once more from the head of the valley, and again disappeared astern of us.” A few lines lower down, in the same passage, we have, “See that brilliant one creeping up the handle of my whip; it comes along with its two tiny burners, like the lights in a carriage, meeting you.” This was in Jamaica, and reminds me that old Mouffet tells a capital story about Jamaica fire-flies; and these, I have proof positive, are *Elaterites*. When Sir Somebody Something, and Sir Something Somebody, first landed on that island, they saw, at night, a great army of Spaniards issue from a wood with torches, and in their hurry to get back to their ships, they ran neck over heels into the sea. The great army of Spaniards turned out to be fire-flies!

There is a story better still in Solis's *Historia de la Conquista de Mexico*: in fact, the fire-fly decided the fate of Cortez, if not, for some time, of Montezuma. You will doubtless remember that Cortez was recalled by Velasquez, the governor of Cuba, that he refused to obey, and that Velasquez sent Parfilo de Narboez to compel him to return. Cortez was then at Mexico, but hastened back, and met Narboez at Zempoala, after some unsuccessful attempts at reconciliation. Finding that Narboez had by far the greatest force, Cortez attacked him by night, and routed his forces, which, in the obscurity, could not distinguish the number of their enemies. “At length,” says Solis, “the battle ceased, because resistance had ceased: the partisans of Narboez shut themselves up in their fortifications; so frightened were they that they dare not even fire, and were only anxious about blocking up the entry. The soldiers of Cortez shouted victory! some for Cortez, some for the King, but the most heedful for the Holy Ghost; exclamations of anticipated joy, which increased the terror of

the enemy. And there was a circumstance which happened very apropos in that conjuncture, namely, that most were persuaded that Cortez had brought a very powerful army, which, as appeared to them, occupied most of the plain. From the windows of their retreat, they discovered, at different distances, some lights, which, interrupting the obscurity of the night, appeared to their eyes lighted matches and troops of musqueteers, being certain insects, *gusanos*, like our glow-worms, *lucernas o noctilucas*, but of greater size and splendour in that hemisphere; a fear which caused much strife among the common soldiers, and left those who were the most courageous, doubtful. So much does fear deceive those who are cast down, and so much are the least trivialities of chance inclined to favour the fortunate." These are, as nearly as I can recollect, Solis's words. I have translated, as well as I could, as I went on, because some, or *one* present, prefers English to any other language.

My favourite, and almost the god of my idolatry, Humboldt, has not said much that I recollect on the subject; nor does he very particularly specify the luminous genera; yet he speaks of fire-flies.—"Comme émus," says he, "du pressentiment d'une perte aussi douloureuse, tristes et rêveurs, nous nous éloignâmes de ce tombeau d'une peuplade entière. C'était par une de ces nuits sereines et fraîches qui sont si ordinaires sous la zone torride. La lune, entourée d'anneaux colorés, brillait au zénith; elle éclairait la lisière du brouillard, qui, comme une nuage à contours fortement prononcés, voilait la fleuve écumeuse. Une multitude innombrable d'insectes repandait une lumière phosphorique rougeâtre sur la terre couverte de plantes. Le sol resplendissait d'un feu vivant, comme si les astres du firmament étaient venus s'abattre sur la savane. Des bignonias grimpans, des vanilles odorantes, et des banisteria à fleurs d'un jaune doré, décoraient l'entrée de la caverne. Au-dessus, les cimes des palmiers se balançaient en frémissant. C'est ainsi que s'évanouissent les générations des hommes; que s'éteint peu à peu le nom des peuples les plus célèbres! mais lorsque chaque fleur de l'esprit se flétrit, lorsque les ouvrages du génie créateur, périsse dans les orages des temps, une vie nouvelle s'élance éternellement du sein de la terre. Prodigue, infatigable, la nature génératrice fait sans cesse éclore les tendres boutons et ne s'inquiète pas si, les

hommes, race perverse et implacable, ne détruiront point le fruit dans sa maturité.” The cavern alluded to is that of Ataruipé, near the rapids of the Oronoco. You must pardon me for quoting beyond my subject, but it was so beautiful I could not leave off.

In turning over a copy of Oviedo, I met with a whole chapter on “flies and other winged insects, that fly and shine by night.” I read it twice over, and will, if you please, give you the substance of it in English as near as I can recollect. “There are in all these islands many flies, or winged insects, and beetles, which shine by night, and fly about, like those which, in Castille, are called luciérnagas (glow-worms) and otherwise, and which fly about in the summer, which do the same here almost at all times, because there is here little difference between the length of the days and nights, and the weather is always mild; for in this island of Española, and the other islands round about, the heat is never excessive, and cold is rarely felt, save when the north wind blows on the sierras, of which there are many. There are, therefore, here, many and different sorts of these glow-worms, but mostly small. However, there is one in particular, which is called *Cocuyo*, which is a thing much to be noticed. This is an animal well known in this island of Española (Hayti) and in the neighbouring ones, and is a species of beetle as large as the last joint of the thumb, or rather less; it has two hard wings, below which are two thinner wings, which it protects and covers with its upper ones when it ceases to fly. It has *eyes* which shine like candles, so that whenever it flies it illuminates the air as would the flame; and if, at the beginning of night, when it is just growing dark, any one should take a *Cocuyo* in his hand, all who needed to light a candle, and saw it from a distance, would come thither to get a light, thinking it to be one already lighted. In like manner, shut up in a dark room, they give sufficient light to see very well to read or write a letter. And if one puts together four or five of these *Cocuyos*, and ties or strings them together, they serve as well as a tolerable lantern in the fields or mountains, or any where soever, the night being very dark. When war was carrying on in this island of Española, and the other islands, the Christians and Indians made use of these lights in order not to lose one another. And especially the Indians, as being most dexterous

in catching these animals, made collars of them when they wished to be seen a league or more off. And thus, both in the fields and houses, people, by means of the light of these *Cocuyos*, do whatsoever they need to do, without the breeze, or a brisk wind, or rain being able to put out their light, and leaving them unable to see whither they go. On this island, when the soldiers sallied out by night, the adalie, or guide, who went before, placed, when the night was dark, a *Cocuyo* on his head, and served as a pharos to all the rest who followed. The same light which this animal has in its eyes, it also has in its back; and when it opens its wings to fly, or flies (goes flying), it shows more light from that which it uncovers, which was below them, and with this it gives as much light as with its eyes; and so the one being joined to the other, the light is greater when it flies. It was customary to keep these *Cocuyos* in confinement for the services of the house, and to sup at night by their splendour. And thus likewise did some Christians in times past, in order not to waste their money in oil for lamps, which then was very dear, or not to be got. And when they saw that from the *Cocuyo* growing weak, or from its grief at its captivity, its shining quality (*virtud resplandeciente*) deaden, or began to diminish, they let it go, and caught others for other following days. The Indians rubbed their faces and chest with a certain paste which they made of these *Cocuyos*, when they celebrated their feasts, and sought to amuse themselves by frightening any one who was off his guard, or knew not what it was; and it appeared as though all those parts which had been anointed with that material were on fire. And as the animal would grow weaker and die, so little by little this brightness faded away, until at last it disappeared from every part, and resolved itself into nothing. And this suffices as to the glow-worm and other animals which shine; of all which, and of all beetles that give light in like manner, I believe that the *Cocuyo* holds the sovereignty in all that is written."

Now the eyes Oviedo speaks of are very plainly the luminous spots on each side of the *prothorax* of the *Elater*, and there appears to be no part in the passage which refers to any insect like the *Fulgora*. I had once the pleasure of seeing this beautiful insect, *Elater*, living and shining; it was in the possession of Mr. Curtis, a gentleman, I believe, known to you

all. From what I have said, I think I have established the fact, that the fire-flies of Mexico, Brazil, Jamaica, England, France, Spain, Italy, Ceylon, and Hindostan, are not in any single instance *Fulgoræ*. I have now only to thank you, Mr. Chairman and gentlemen, for the very kind and attentive manner in which you have been pleased to listen to me.

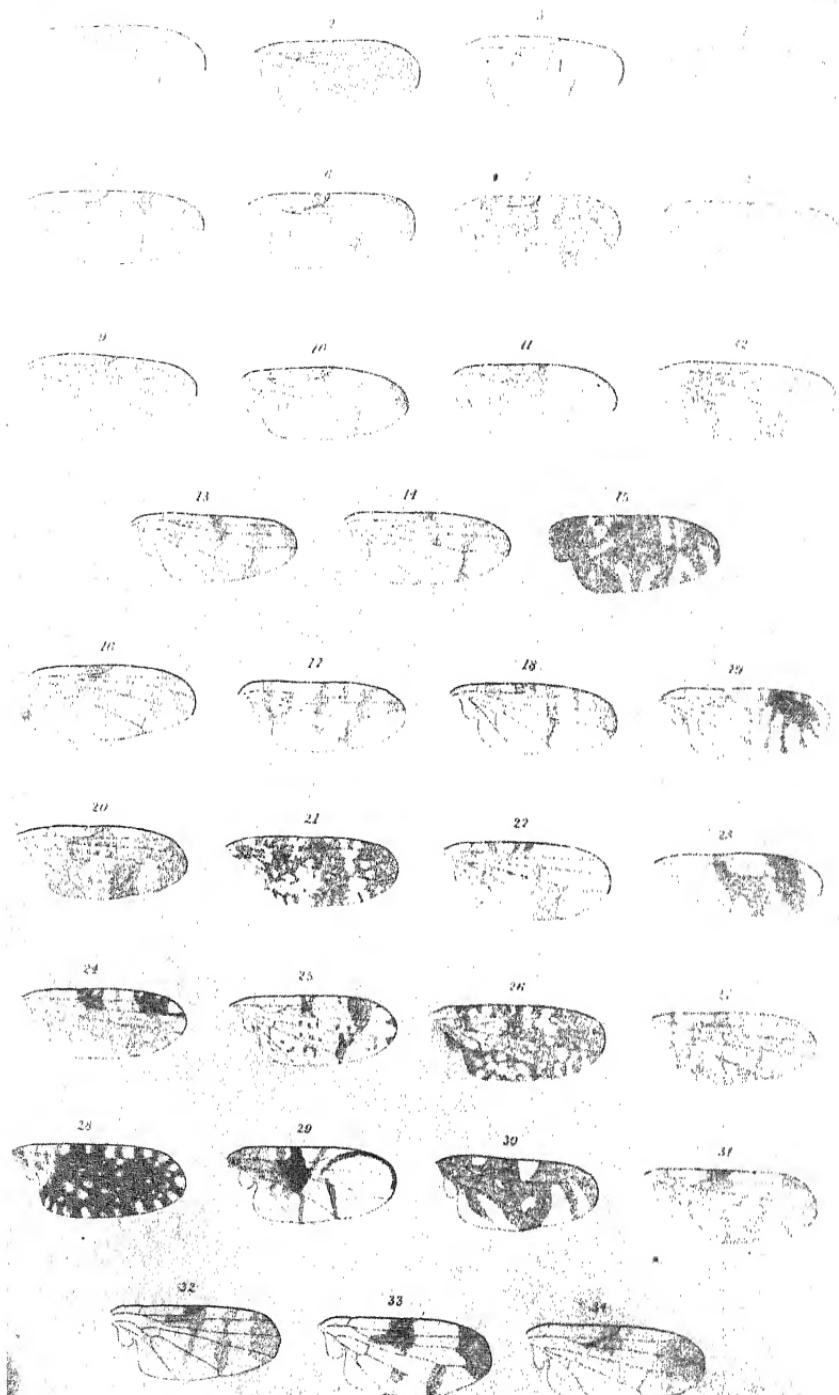
MR. HANSON.—Mr. Chairman, after the luminous speech of the late Editor, I shall not presume to trespass on your time further, than to say that I perfectly coincide with that gentleman in the opinions which he has advanced, and therefore most cordially second the motion.

Dr. K.—.—Mr. Chairman, I hope I am not out of order: I am so fond of keeping others in order, that I would not for the world be out of order myself; but it seems to me, that before the question is put from the chair, any of the "Noes" ought to be heard. I am aware, Sir, you did not expect that there could be a single "No;" and it is very odd that there should be a "No," very odd indeed; but, Sir, it is no less odd than true, and I could not sit quiet and give a silent "No," and so remain in the unpleasant minority of one, because it would look like factious opposition. To the question, Sir, which you will have to propose, I most decidedly say "No." What! put an extinguisher on the fire-fly!—put out her light!—never! never! never! The learned ex-editor, and author of the Delta Letters, ought never to have thought of such a thing. I congratulate my learned friend certainly on the brilliancy of his speech; it was altogether luminous,—one blaze throughout,—one bright mass of knowledge,—and clear and convincing as heart could desire. I never read any of his productions that displayed greater talent:—he shows up the fire-flies of every country, marshals them before us, and proves, to our infinite satisfaction, that fire-flies are fire-flies, (Mr. DOUBLEDAY, *Elater*). Well, proves that fire-flies are *Elater*. (Mr. DOUBLEDAY, and *Lampyris*.) Well, *Elater* and *Lampyris*! be it so. Now, Sir, I have just enough entomology in me to know what these names mean; and at this I am much comforted. And I also know, and I have long known, that *Elater* and *Lampyris* are luminous insects. I think the learned ex-editor, and author of the Delta Letters, has not illumined their luminosity with any new light. Does

my learned friend advance this as a new discovery? In faith he does: he calls aloud to us in a voice of wonder,

“ Like Katerfelto with his hair on end,
At his own wonders wondering for his bread,—”

that *Lampyris* and *Elater* are luminous insects! Most precious discovery! most wondrous and learned Delta! and at this you cry, *Ευρηκα*. (Mr. DOUBLEDAY, No! that *Fulgora* is not luminous, that is the point.) O, indeed! Then, Sir, the learned ex-editor, and author of the Delta Letters, did not confine himself to the point; all the pleasing quotations about fire-flies were not to the point, were beside the mark. But what is the question? If I understand it rightly it is this:— Is the insect which stands as figure-head of the fire-fly luminous or not luminous? The insect is called *Fulgora candelaria*. Is it luminous or not luminous? Is that the question, Mr. Chairman? Very well, Sir! then I maintain that as it is luminous by common consent, it must remain luminous until proved to be not luminous. Now, Sir, the learned ex-editor and author of the Delta Letters, as far as I heard him, made no allusion, directly or indirectly, to *Fulgora candelaria*; and therefore his speech, however able, however perfect, however convincing, however comforting, however learned, leaves the main question entirely untouched. (Mr. DOUBLEDAY, I will withdraw the motion.) Oh! withdraw the motion; the Chairman cannot permit it until we have just examined the matter. I am only beginning to peep into it. (Mr. DOUBLEDAY, I have had quite enough.) Well, well, we will make a tack. The learned ex-editor, Sir, proves the non-luminosity of *Fulgora candelaria*, by stating, that Madame Merian had a poetic fancy; and he thus proves her ladyship's taste for poetry. Madame Merian says, that *some insects*, not *Fulgora candelaria*, shone in the box. She opened the box, they fell on the floor, and still shone. To contradict this, a Frenchman is cited, and he most distinctly states, that the insects are phosphorescent as soon as dead. Now, why were not Madame Merian's insects dead? and if dead, they had as much right to shine as the Frenchman's fire-flies. Surely this is but slender proof of the poetry of Madame Merian. I observe, Sir, my friend, the learned ex-editor, is not inclined to press the matter; and I have,



therefore, cautiously avoided all severity in my reply. I will beg to propose, as an amendment, "That this discussion be resumed this day six months."

(*The remainder of the Discussion in our next*).

ART. V.—*Descriptions of the British Tephritis.* By
FRANCIS WALKER.

THE lively and rich colours of these insects, their emerald eyes glowing with the hues of the rainbow, and their wings fancifully adorned with bands, stars, and circles, have been much admired by Entomologists: their habits, while grubs, are also very interesting; most of them inhabit galls on various plants of the syngenesious kind, for piercing which, the female fly has a broad horny *telum*, a character peculiar to the order. The perfect insects walk and fly slowly, and generally repose on flowers. Desvoidy observes that they are to the other *Muscina* as the *Curculionites* are to the *Coleoptera*, or the *Tenthredinites* to the *Hymenoptera*.^a They are allied to the *Sapromyzites* and to the *Phytomyzites*; the narrow *peristoma* (or cavity of the mouth) and the habits of the grubs, distinguish them from the former, the antennæ and the nervures of the wings from the latter, and the *telum* (or tip of the abdomen) from both.

The body is moderate as to size, generally downy, and thinly clothed with hairs and bristles, rarely smooth and shining. The head is transverse, as broad as the thorax, rounded, sometimes narrowed and lengthened in front; the eyes are rather small, brilliant green, varied with splendid colours during life, dull green, or dull red after death;

^a *Essai sur les Myodaires*, a work that has been little noticed in this country. He has much improved their systematic arrangement; his investigations on their structure and economy are extensive and laborious; and, moreover, he has given to them some hundred new generic names, that have great euphony and simplicity, very unlike those

"Heaps of huge words uphoorded hideously,
With horrid sound, though having little sense,"

now so prevalent in Entomology.

His chief faults are the utter disregard with which he treats the works of Meigen, Fallen, and Wiedemann, and his fondness for giving specific names to mere varieties.

three little eyes are pale, nearly limpid, placed on the front of the head between the eyes, in a triangle, which generally has a dark colour; the parts of the mouth are small; the *peristoma* (or cavity to which the base of the mouth is attached, and in which it is commonly retired during repose) is round, oval, or angular; the *facialia*, which border upon its sides, are fringed with black hairs; the *epistoma* (or front of the peristoma) is often prominent; the feelers are moderately long, their tips armed with a few black bristles: the antennæ are 6-jointed, short; the first and second joints have a few black hairs above, the former is small, the latter larger, cup-shaped; the third is still larger, its shape varying from round to cylindric; the fourth and fifth are very small, the former joins the base of the third; the sixth is long, dark, like a bristle, almost always downy, the thorax is arched, oval, sometimes nearly square; the scutellum prominent; the abdomen is oval, rather longer than the thorax, more or less arched, sometimes cylindric or round; it has five cross segments, of which the basal one is the largest; on each side beneath is a long, sometimes hardly seen, striped plate, hiding part of the segments of the belly: the telum is smooth and shining, of the female long, with four segments like tubes; the ovipositor is red, hidden within the telum when not in action; the legs are slender, straight, hairy; the tips of the tibiæ armed with two black spines; the soles of the feet pale; the claws black; the wings are moderate, downy; the five long and two cross nervures nearly straight, one of the latter is in the middle of the wing, the other much longer and nearer the tip; at the base of the wing are some little nervures, more or less indistinct; the costa is hairy, joins the fourth nervure at the tip of the wing, and has two bristles towards its base; the winglets are obsolete.

Among the British species, the snowy white *Urellia*, the rich saffron *Forellia*, the prettily-spotted *Orellia*, and the deep brown *Noeeta*, with its brilliant jet scutellum, are remarkable for their beauty.

Desvoidy has divided his *Myodariæ* into nine families; the Tephritites, or *Aciphoreæ*, as he calls them, in allusion to their telum, form the sixth; he has again divided these into seventeen genera, that are arranged as follows:—

ENSINA.—*Desvoidy.*

Distinguished by the pale colour, the head narrowed and lengthened in front, the long and bent mouth, the short and slender telum, and the almost spotless wings.

Body downy; peristoma long and angular; epistoma prominent; feelers long and slender; third joint of antennæ short, nearly round; telum of female flat, longer than half the abdomen; fifth long nervure not reaching the border of the wing; cross nervures straight and upright.

Sp. 1. *Ens. sonchi*. *Yellow; thorax grey, and abdomen green above, wings white, sometimes with a few very small brown spots.* (Plate I. fig. 1.)

Musca sonchi . *Linn. Syst. Nat. II. 998; Gmel. Syst. Nat. V. 2857. 121.*

Tephritis sonchi . *Fallén, Dipt. Suec. Ortal. 14. 23.*

Trypeta sonchi . *Meig. Europ. Zweiflug. Ins. V. 345. 50.*

Trypeta obsoleta *Wied. Meig. Europ. Zweiflug. Ins. V. 349. 60.*

Ensinae chrysanthemi, herbarum, pratensis, linariae, scorzonerae, doronici . *Desvoidy, Essai sur les Myodaires, 752. 753. 1—6.*

Yellow: head black behind, clothed with white hairs, and round the eyes with a few black hairs; border of the forehead red; mouth almost white; thorax clothed with white hairs and black bristles, grey above, black beneath, yellow before and on each side; scutellum pale green with a yellow border, red at the tip, the disk sometimes grey or green, metathorax black; abdomen dark green above, with a band of yellow on the hind border of each segment, clothed with grey or black hairs and bristles; telum black, of the female with the tip, and sometimes a spot on each side near the base yellow; legs yellow, sometimes brown above; thighs sometimes tawny; 5th joint of tarsi, and sometimes 3d and 4th joints of 4 hind tarsi brown; wings white, with a few hardly seen cross bands, and along the upper border some much darker and more marked small brown spots, varying in number; nervures brown, yellow towards the base of the wing; borders of cross nervures brown; poisers lemon colour. (Length of body 1—1½ line; of wings 2—2½ lines.)

Common in the south and west of England during the autumn.

OXYPHORA.—Desvoidy.

Has the mouth like *Ensina*, but is much larger, the colour is tawny, the head is not narrowed nor lengthened in front, the wings are rust colour, varied with a few little limpid spots.

Body downy; peristoma nearly round, scarcely longer than broad; epistoma slightly prominent; feelers long and rather broad; 3d joint of antennæ short, oval, compressed, flat above, convex beneath; scutellum rather prominent; abdomen slightly arched; telum very short; wings long; 5th long nervure not reaching the border of the wing; short cross nervure straight, upright; the other one slightly bent, nearer above to the tip of the wing.

Sp. 1. *Oxy. Westermanni.* Fem. *Rust colour; wings brown, varied with numerous yellow, and a few white spots.* (Fig. 2.)

Musca vinulus? . . . *Harris, Exp. 117, Pl. XXXIV. fig. 21.*

Tephritis Westermanni. *Meig. Europ. Zweiflug. Ins. V. 333. 32. Pl. L. fig. 6.*

Oxyphora Cardui. . . . *Desvoidy, Essai sur les Myodaires, 757. 2.*

Rust colour, clothed with yellow hairs and black bristles: head pale, yellow beneath and round the eyes, with a few white bristles above; mouth and feelers tawny, clothed with white hairs; antennæ tawny, 6th joint with a very short down; scutellum tawny; metathorax pale yellow, silky; abdomen not bristly; telum wedge-shaped, not longer than one fifth of the abdomen black at the tip; legs clothed with short yellow hairs; wings rich brown, varied with small yellow and white spots; the former are very numerous, and often joined together in the disk of the wing, they are fewer towards the border, and cease altogether at the tip and along the lower part of the wing; the latter are few, various in size and shape, most of them along the lower border, largest one long and narrow in the disk of the wing between the 4th and 5th long nervures; nervures brown, paler towards the base; poisers tawny. (Length of body $3\frac{1}{2}$ lines; of wings $6\frac{1}{2}$ lines.)

Very rare in England.

TERELLIA.—Desvoidy.

Sides of the body nearly parallel, shoulders square.

Body slightly angular; feelers long, broader towards their tips; thorax nearly linear, with three white stripes on each side

beneath; abdomen with four rows of black spots; wings either unspotted, or with spots reaching from the upper border into the middle of the wing.

Body tawny, covered with white down; head broad, short, rounded in front, clothed with white hairs and black bristles, pale beneath; peristoma angular, scarcely longer than broad, almost white; epistoma not prominent; lip moderately long, clothed with black and white hairs; feelers long and broad, their tips bright yellow; antennæ yellow; 3d joint bright yellow, flat above, convex beneath, slightly pointed; thorax angular, with a few black bristles above, and a black spot beneath on each side between the fore and middle legs; scutellum covering the metathorax; abdomen nearly flat, sparingly clothed with black hairs; telum of the female broad, flat, as long as half the abdomen, gradually narrowing from the base to the tip; legs clothed with black hairs; wings limp; nervures brown, yellow toward the base of the wing; cross nervures straight and upright; poisers yellow.

The species inhabit dry and chalky districts, and are not common.

Sp. 1. *Ter. serratulæ*. Male and Fem. *Wings limpid, unspotted.* (Fig. 3.)

Musca serratulæ *Linn. Syst. Nat.* II. 997. 118;
Faun. Suec. 1871; *Gmel. Syst. Nat.* V. 2856. 118; *Fabr. Mant. Ins.* II. 352. 115; *Spec. Ins.* II. 453. 96; *Ent. Syst.* IV. 356. 182; *Turt.* III. 620.

Dacus serratulæ *Fabr. Syst. Antl.* 278. 27.

Tephritis serratulæ *Fallén, Dipt. Suec. Ortal.* 14. 22.

Trypeta serratulæ *Meig. Europ. Zweiflug. Ins.* V. 346.

Trypeta pallens *Wied. Meig. Europ. Zweiflug. Ins.* V. 347; *Pl. L. fig. 5.*

Terelliæ palpata & luteola. *Desvoidy, Essai sur les Myodaires,* 758. 9. 1, 2.

Head beneath and sometimes round the eyes almost white; mouth tawny, sometimes yellow; 1st, 2d, 4th, and 5th joints of the antennæ sometimes almost white; thorax above with two black bands joined together before, pale red beneath; the two black or rarely brown spots circled with yellow; metathorax brown; abdomen

sometimes yellow, 4th segment with a black spot on each side of its hind border; telum of the female with a black spot on each side of the base, brown at the tip; legs pale yellow, almost white beneath; coxae with flesh-coloured spots; middle and hind thighs partly, and fore thighs altogether flesh-coloured, clothed with white hairs; wings with a yellow spot between the upper border and the end of the 1st long nervure; poisers sometimes almost white. (Length of body 2— $2\frac{1}{2}$ lines; of wings $3\frac{2}{3}$ lines.)

June and September; Isle of Wight.

Sp. 2. Ter. *Alciphron*. Male and Fem. *Like Serratulæ but much darker, wings limpid, spotted beneath the upper border.* (Fig. 4.)

Tephritis Alciphron . *Newman Ent. Mag.* I. 505.

Like *Serratulæ* in size and shape: head yellow beneath; disk of the thorax almost black, with three angular tawny spots behind; sides pale yellow; scutellum dark tawny, the sides and tip paler; metathorax brown; spots on the abdomen hardly seen; telum of female with a black stripe on each side above and beneath, 1st segment altogether black; legs tawny; tarsi darker: wings of the male with two large brown spots beneath the costa, one in the middle, the other much larger and reaching to the tip; wings of the female with two small black spots, one at the end of the 2d, the other of the third nervure, and a yellow spot between the costa and the end of the 1st nervure; costa yellow, black towards the tip of the wing; cross nervures of male with brown borders. (Length of body 2— $2\frac{3}{4}$ lines; of wings $3\frac{2}{3}$ —4 lines.)

June; Isle of Wight.

Note.—*Trypetæ Wenigeri* and *Colon* of Meigen are nearly allied to *serratulæ* and *Alciphron*.

Sp. 3. Ter. *florescentiæ*. Male and Fem. *Much smaller than serratulæ, colour livelier, wings limpid, varied with white, and with four large black spots.* (Fig. 5.)

Musca florescentiæ . *Lin. Faun. Suec.* 1880.

Musca rufi-cauda . . *Fabr. Ent. Syst.* IV. 353. 169.

Dacus rufi-caudus . . *Fabr. Syst. Antl.* 276. 17.

Tephritis florescentiæ . *Fallén, Dipt. Suec. Ortal.* 7. 9.

Trypetæ florescentiæ . *Meig. Europ. Zweiflug. Ins.* V. 321. 16.
Pl. XLVIII. fig. 25.

Head beneath and mouth yellow; thorax yellow beneath, with a black (*male*) or brown (*female*) stripe on each side; disk black,

with a yellow stripe on each side, and an angular spot of the same colour between; scutellum of the female yellow, sometimes reddish yellow; metathorax black, in the female rust colour beneath; 4th segment of abdomen of male with a black spot on each side of its hind border; telum of female rust colour, black above at the base and banded with black before the tip, sometimes black altogether above and at the tip beneath; legs yellow; thighs of the female almost white; wings varied with white, and with four large black spots, varying in size, three of them costal, and the 4th near the lower border where the 5th long and the cross nervures meet; there is also a pale brown spot at the base of the wing, between the 3d and 4th nervures; cross nervures of the female, and sometimes of the male, bordered with brown; a variety has the middle costal spot and the one near the lower border joined together, and thus forming a band across the wing. (Length of body $1\frac{1}{4}$ —2 lines; of wings $2\frac{3}{4}$ —3½ lines.)

June; near London; New Forest, Hampshire; Isle of Wight.

FORELLIA.—*Desvoidy.*

Distinguished by the rich saffron colour, the peristoma angular and hardly longer than broad, the slightly prominent epistoma, the long and nearly cylindric 3d joint of antennæ, the yellow wings spotted with black.

Body downy, rather long; mouth short; feelers nearly cylindric, not thickened; antennæ rather long; scutellum short, obtuse, nearly triangular, almost hiding the metathorax; abdomen nearly flat above, of the female longer than of the male, and gradually narrowing from the base to the tip; telum of the female with half the length of the abdomen; cross nervures of wings slightly curved, short one having the upper, longer one the lower end nearest the tip of the wing.

Sp. 1. For. arnicæ. Male and Fem. *Saffron colour, wings slightly yellow, varied with grey and white, and with four large black spots.* (Fig. 6.)

Musca arnicæ . *Linn. Syst. Nat. II. 997. 115; Faun. Suec. 1872; Gmel. Syst. Nat. V. 2856. 119; Fabr. Ent. Syst. IV. 352. 166; Schrank, Austr. Ins. 959; Aldrov. Ins. 346. Pl. I. fig. 5; Scop. Ent. Carn. 941.*

- Musca flava, alis fulvis, &c. *Geoff. Ins.* II. 498. 12.
- Musca miliaria Schrank, *Austr. Ins.* 476. 968; *Gmel. Syst. Nat.* V. 2863. 306.
- Musca onopordinis *Don. II. 67. Pl. LXII.?* *Turt. III.* 622?
- Musca arcuata *Fabr. Mant. Ins.* II. 352. 105; *Sp. Ins.* II. 451. 86; *Ent. Syst.* IV. 353. 170; *Gmel. Syst. Nat.* V. 2856. 242; *Panz. Faun. Germ.* XCVIII. 22.
- Trupanea spherocephali Schrank, *Fauna Boica*, III. 2515.
- Dacus arcuatus *Fabr. Syst. Antl.* 277. 19.
- Tephritis arnicæ *Fabr. Syst. Antl.* 316. 1; *Latr. Gén. Crust. et Ins.* IV. 355; *Dict. d'Hist. Nat.* 24. 196. 385; *Fallén, Dipt. Suec. Ortal.* 8. 10.
- Trypeta arnicæ Meig. *Europ. Zweiflug. Ins.* V. 333. 31.
- Forellia onopordi Desvoidy, *Essai sur les Myodaires*, 761. 1.

Body bright saffron colour, tawny beneath, clothed with black and white hairs, and a few white bristles; head beneath and throat white; epistoma rust colour in front; lip tawny, clothed with black and white hairs; feelers yellow, clothed with white hairs; antennæ yellow; metathorax grey; side plates beneath the abdomen brown; telum rust colour, of the female brown at the tip; legs yellow, clothed with black hairs; wings slightly yellow, with several hardly seen grey and white spots, almost white at the base, having also four large black spots, sometimes varied with limpid punctures, the 1st joining the middle of the costa, the 2d and largest at the tip of the wing, the 3d on the lower cross nervure, the 4th and smallest near the base of the wing, under the 5th nervure; costa and nervures yellow, the former brown towards the tip; poisers pale yellow. (Length of body $2\frac{1}{2}$ — 3 lines; of wings 4—5 lines.)

Common in July; on thistles, near London.

ORELLIA.—*Desvoidy.*

The very prominent borders of the peristoma will distinguish this genus from all the other *Tephritis*. It resembles *Ceratites* in shape and markings.

Sp. 1. Orel. Wiedemann. *Yellow, thorax varied with black, wings limpid, with four brown bands.* (Fig. 7.)

Trypeta Wiedemann. Meig. *Europ. Zweiflug. Ins.* V. 320.
15. Pl. XLIX. fig. 2.

Orellia flavicans. . *Desvoidy, Essai sur les Myodaires,*
765. 1.

Head bright yellow above with a few bristles, the front ones black, those behind white, paler beneath; epistoma prominent; mouth bright yellow; feelers not thickened; antennæ bright yellow; 3d joint nearly oval, pointed and slightly turned upwards at the tip; 6th joint very downy; thorax black, clothed with white hairs and black bristles, smooth and shining behind; scutellum bordered with yellow, not hiding the metathorax, with a cross yellow band behind, and nine yellow rays parting from the centre on all sides; these rays are sometimes very broad, and occupy nearly the whole of the disk of the mesothorax; metathorax dull greyish black; abdomen bright yellow, paler towards the tip, each segment with a black sometimes hardly seen spot on either side; telum rust-colour, very short; legs deep yellow; wings limpid with four brown bands joined to the costa, and bordered with darker colour, 1st very short, 2d rather longer and sometimes joined to the 1st., 3d still longer, and reaching the lower border, 4th joined to the 3d., and passing along the costa to the tip of the wing; nervures brown, yellow toward the base of the wing; cross nervures straight and upright; poisers pale yellow. (Length of body 2 lines; of wings $3\frac{1}{2}$ lines.)

Found near London, but is not common.

TEPHRITIS.—*Latreille.*

Colour green or brown: telum of female longer than half the abdomen; wings limpid with five light brown bands bordered with darker colour.

Body downy, clothed with white hairs; head rounded, rust-colour above, yellow beneath; peristoma white, angular, not longer than broad; epistoma not prominent, slightly notched in the middle; mouth short; 3d joint of antennæ nearly cylindric; scutellum

triangular, rounded at the tip, scarcely hiding the metathorax, which is black and slightly shining above ; abdomen clothed with black hairs ; telum rust colour, of female wedge-shaped ; legs clothed with black hairs ; 1st band of wing scarcely seen ; costa and nervures brown, yellow toward the base of the wing ; shorter cross nervure straight and upright ; longer one slightly bent, its upper end nearer the tip of the wing ; poisers pale yellow.

Sp. 1. *Teph. cornuta*. *Sea-green, antennæ of male with a long appendage above.* (Fig. 8.)

Musca cornuta . . *Fabr. Ent. Syst. IV.* 357. 186.

Scatophaga cornuta *Fabr. Syst. Antl.* 209. 28.

Tephritis cornuta . *Fallén, Dipt. Succ. Ortal.* 4. 1 ; *Curtis Brit. Ent.* V. 241.

Trypeta cornuta . *Meig. Europ. Zweiflug. Ins.* V. 318. 12. Pl. XLVIII. fig. 2.

Body sea-green : peristoma broader in front ; lip yellow ; antennæ yellow, those of the male with the 2d joint emitting a long pale yellow almost cylindric lobe armed with stout black bristles, 2d joint of the female brown above, 3d joint bright yellow, paler at the base ; thorax with a few black bristles above, yellow on each side and beneath, with a large grey spot on each side between the fore and middle legs ; abdomen with four black spots at the base of each segment from the 2d to the 5th ; the spots are often hidden by the border of the preceding segment ; legs yellow ; wings limpid, 2d and 3d bands shortened ; 4th reaching the lower border, 5th at the tip of the wing darker. (Length of body 2—3 lines ; of wings 4—5½ lines.)

June and September ; Isle of Wight.

Sp. 2. *Teph. lappæ*. *Tawny, antennæ of both sexes simple.* (Fig. 9.)

Musca arctii . . *Panz. Faun. Germ.* XXII. 23.

Trypeta lappæ . *Meig. Europ. Zweiflug. Ins.* V. 318. 11.

Tephritis arctii? *Desvoidy, Essai sur les Myodaires,* 767. 6.

Tawny, clothed with white hairs and black bristles ; antennæ pale red, 3d joint clothed with white down ; thorax with a grey spot on each side beneath the fore and middle legs ; mesothorax varied with grey above ; scutellum almost yellow ; abdomen greyish brown, covered with a thick down, and having four black spots at the base of each segment ; legs pale tawny ; wings with the 2d

band joined to the 3d, and the 4th to the 5th, at the upper border, the two former reaching a little lower than the middle of the wing. (Length of body 3 lines; of wings 4½ lines.)

Found near London.

Sp. 3. *Teph. tussilaginis*. *Like T. lappæ, but smaller, slenderer, and paler.* (Fig. 10.)

Musca tussilaginis *Fabr. Mant. Ins. II.*
353. 122; *Spec. Ins. II.*
454. 101; *Ent. Syst.*
IV. 359. 193; *Gmel.*
Syst. Nat. V. 2858.
250.

Trupanea acanthi *Schrink, Fauna Boica,*
III. 2509.

Dacus tussilaginis *Fabr. Syst. Antl.* 277. 24.

Trypetta tussilaginis *Meig. Europ. Zweiflug.*
Ins. V. 319. 13. *Pl.*
XLVIII. fig. 26.

Tephrytes cylindrica et impunctata. *Desvoidy, Essai sur les*
Myodaires, 767. 4, 5.

Yellow, clothed with white hairs and black bristles; antennæ pale red, 3d joint clothed with white down; thorax tawny above, with a grey spot on each side beneath between the fore and middle legs; abdomen tawny, covered with a thick down, and having four black spots at the base of each segment; telum darker at the tip; legs yellow; wings with the 2d band joined to the 3d at the upper border, the latter reaching nearly to the lower border, 4th and 5th bands separate. (Length of body 2½ lines; of wings 4 lines.)

Found near London.

Sp. 4. *Teph. arctii*. *Like T. lappæ, but much smaller.* (Fig. 11.)

Musca arctii *Degeer, Ins. VI.* 42. 16. *Pl. II.* fig. 6—14.

Musca punctata? . . *Schrink, Ins. Austr.* 963.

Trupanea punctata? *Schrink, Fauna Boica*, III. 2510.

Tephritis solstitialis *Panz. Faun. Germ.* CIII. 22.

Tephritis arctii . . *Fallén, Dipt. Suec. Ortal.* 4. 2.

Trypetta arctii . . *Meig. Europ. Zweiflug. Ins. V.* 317.
10. *Pl. XLVIII.* fig. 28.

Tephrytes jaceæ, dorsalis, pusilla et abdominalis . *Desvoidy,*
Essai sur les Myodaires, 766. 768. 1, 2, 3. 7.

Light brown, beneath paler, almost tawny; antennæ pale red, 3d joint clothed with white down; thorax grey above, the sides yellow, a black spot on each side between the fore and middle legs; scutellum almost yellow, with three black punctures; spots of the abdomen largest on the 3d segment; legs pale tawny; wings with the 2d band joined to the third, (the latter nearly reaching the lower border), and the 4th to the 5th at the upper border. Length of body $1\frac{3}{4}$ — $2\frac{1}{2}$ lines; of wings $2\frac{3}{4}$ — $3\frac{1}{2}$ lines.)

Common near London, in the autumn.

UROPHORA^b.—*Desvoidy.*

Like Tephritis, but colour black, scutellum bright yellow, telum of female very long, compressed, almost cylindric, wings white, with black bands.

Body clothed with grey down and black hairs; head yellow or tawny, with a few black bristles, slightly narrowed in front, black behind; peristoma angular, white, bordered with saffron, hardly longer than broad; epistoma not prominent, slightly notched in front; mouth saffron, yellow towards the base; antennæ short, tawny; 3d joint red, almost cylindric, slightly concave above, convex beneath; throat yellow; thorax beneath and metathorax above shining, the former with a bright yellow line on each side, and a cross band of the same colour at the base of the fore legs; abdomen nearly linear; telum of the female narrowing to the tip; legs clothed with black hairs; wings yellow at the base; costa and nervures yellow, brown towards the tip of the wing; cross nervures nearly upright, longer one slightly bent; poisers bright yellow.

Sp. 1. Uro. cardui. *Telum of female as long as half the abdomen, wings with four broad bands forming a waved line.* (Fig. 12.)

Musca cardui . *Linn. Syst. Nat.* II. 998. 126; *Faun Suec.* 1876. 1063; *Degeer, Ins.* VI. 49. 18; *Gmel. Syst. Nat.* V. 2858. 126; *Fabr. Mant. Ins.* II. 353. 120; *Spec. Ins.* II. 454. 100; *Ent. Syst. IV.* 359. 191; *Stew. II.* 263; *Turt. III.* 621.

^b This name has been applied to a genus of *Hemiptera*.

Musca cardui. *Gæd. Ins.* I. 50; *List. Gæd.* 313. 102. Pl. CXXIX.; *Blank. Ins.* 189. Pl. XVI. fig. T.; *Réaum. Ins.* III. 457. Pl. XLV. fig. 12—16; *Leeuwenh.* 58, fig. 10.

Musca alis linea undulata, &c. *Geoff. Ins.* II. 496. 8.

Trupanea cardui, *Schränk, Fauna Boica*, III. 2514.

Tephritis cardui. *Fabr. Syst. Antl.* 321. 21; *Latr. Gén. Crust.* IV. 355; *Règne Anim.* V. 534; *Lam. Anim. sans Vertèbres*, III. 364. 2.

Trypeta cardui. *Meig. Europ. Zweiflug. Ins.* V. 326. 23. Pl. XLIX. fig. 9.

Urophoræ Reaumurii, *liturata*, *Sonchi*, *centaureæ* et *Dejeanii*. *Desvoidy, Essai sur les Myodaires*, 770—772. 4—8.

Head bright yellow, paler beneath; telum of female as long as half the abdomen; legs tawny; coxae brown; thighs black, tawny at either end; wings with the 1st band joined to the 2d, and the 3d to the fourth above, 2d and 3d joined together below. Length of body $2\frac{1}{4}$ — $2\frac{3}{4}$ lines; of wings $3\frac{1}{2}$ — $4\frac{1}{4}$ lines.)

Inhabits thistles in the south of England during the summer and autumn.

Sp. 2. *Uro. pugionata*. *Telum of the female as long as the abdomen, wings with four separate rather broad bands.* (Fig. 13.)

Trypeta pugionata *Meig. Europ. Zweiflug. Ins.* V. 330. 28. Pl. XLIX. fig. 11.

Urophoræ solstitialis et femoralis. *Desvoidy, Essai sur les Myodaires*, 769, 770. 2, 3.

Head tawny above, paler beneath; legs tawny; coxae yellow beneath; thighs black, tawny at either end; wings with the 1st band shortened, 2d sometimes divided, 3d and 4th sometimes joined together above. (Length of body $1\frac{1}{2}$ — $2\frac{1}{2}$ lines; of wings 3 — $3\frac{1}{2}$ lines.)

Common in the south of England during the summer and autumn.

Sp. 3. *Uro. solstitialis*. *Larger than U. pugionata, telum of female longer than the abdomen, wings with four narrow bands, 1st and 2d often shortened, divided, or wanting.* (Fig. 14.)

Musca solstitialis . *Linn. Syst. Nat. II. 999. 127; Faun. Suec. 1879; Gmel. Syst. Nat. V. 2858. 127; Berk. I. 165?; Stew. II. 263; Turt. III. 621; Don. IX. 15. Pl. 294?; Fabr. Sp. Ins. II. 454. 103; Ent. Syst. IV. 359. 195.*

Musca alis fasciis } *Geoff. Ins. II. 499. 14.*
tribus, &c. . }

Musca dauci . . *Fabr. Mant. Ins. II. 353. 118; Ent. Syst. IV. 358. 187; Gmel. Syst. Nat. V. 2857. 248.*

Musca stylata . . *Fabr. Mant. Ins. II. 351. 104; Sp. Ins. II. 451. 85; Ent. Syst. IV. 353. 168; Gmel. Syst. Nat. V. 2855. 241.*

Dacus stylatus has- } *Fabr. Syst. Antl. 275—277. 13. 15.*
tatus et dauci . . } *22.*

Tephritis solstitialis *Fabr. Syst. Antl. 321. 25; Fallén, Dipt. Suec. Ortal. 6. 5; Lam. Anim. sans Vertèbres, III. 364. 1.*

Trupaneæ cirsii et } *Schrank, Fauna Boica, III. 2505. 2507.*
leucacanthi . . }

Musca jacobææ . *Panz. Faun. Germ. XCVII. 22.*

Tephrites jacobææ } *Fallén, Dipt. Suec. Ortal. 6, 6. 7, 7.*
et aprica . . }

Trypetæ stylata, cuspidata, aprica et solstitialis . *Meig. Europ. Zweiflug. Ins. V. 327—329. 24—27.*
Pl. XLIX. fig. 5, 10, 12, 13.

Urophora cardui . *Desvoidy, Essai sur les Myodaires, 769. 1.*

Note.—Some of these synonyms may belong to the preceding species, for it often agrees with the descriptions attached.

Head tawny above, paler beneath; legs tawny; fore-coxae yellow beneath; thighs sometimes black at the base; wings with four separate bands, 1st one shortened, sometimes wanting; 2d generally entire, but sometimes shortened or divided, or even nearly effaced; 3d and 4th usually joined together at the upper border,

sometimes separate, the former rarely shortened above. (Length of body 2—3½ lines; of wings 3½—4½ lines.)

Common in the south of England during the summer and autumn.

ACIURA.—*Desvoidy.*

Like to *Urophora*, but more shining, peristoma longer, telum of female much shorter, wings almost entirely black.

Body shining; head and thorax clothed with black hairs and bristles, the former scarcely narrowed in front; peristoma very pale, angular, much longer than broad; epistoma notched in the middle; mouth red; feelers pale, slender; antennæ red, 3d joint short, slightly concave above, convex beneath; scutellum almost a semicircle, not prominent; abdomen nearly linear; telum of female very short; legs hairy; wings black or brown, variegated with limpid spots; nervures brown, yellow at the base; cross nervures nearly upright; poisers yellow.

Sp. 1. *Aci. lychnidis*. *Black, legs red, wings black, with several little limpid spots.* (Fig. 15.)

Musca lychnidis . . *Fabr. Mant. Ins. II.* 353. 120; *Ent. Syst. IV.* 360. 197; *Gmel. Syst. Nat. V.* 2858. 251.

Tephritis lychnidis . . *Fabr. Syst. Antl.* 322. 26; *Fallén, Dipt. Suec. Ortal.* 14. 24.

Trypetta lychnidis . . *Meig. Europ. Zweiflug. Ins. V.* 324. 21. *Pl. XLIX.* fig. 6.

Head red; thorax slightly grey above, with a reddish spot on each side near the base of the wing; scutellum sometimes with a red border; spots of wings mostly long and narrow, some of them reaching from the border into the disk. (Length of body 3 lines; of wings 4½ lines.)

Very rare in England.

Sp. 2. *Aci. discoidea*. *Red, abdomen black, wings brown, with a few large limpid spots.* (Fig. 16.)

Musca discoidea . . *Fabr. Ent. Syst. IV.* 350. 155; *Gmel. Syst. Nat. V.* 2854. 239?

Dictya discoidea . . *Fabr. Syst. Antl.* 326. 3.

Tephritis centaureæ. *Fallén, Dipt. Suec. Ortal.* 16. 26.

Trypetta discoidea . . *Meig. Europ. Zweiflug. Ins. V.* 323. 19. *Pl. XLIX.* fig. 14.

Thorax greyish brown above ; scutellum red ; metathorax black ; wings brown, at the base limpid with a brown cross band, at the tip with one small and three large limpid spots. (Length of body 2 lines ; of wings $3\frac{1}{2}$ lines.)

Very rare in England.

SPHENELLA.—Desvoidy.

Like *Urophora*, but head narrowed and lengthened in front, peristoma longer, epistoma triangular and very prominent, telum of female short.

Sp. 1. Sphe. signata. *Black ; head tawny, scutellum yellow, wings white, with six dark brown bands.* (Fig. 17.)

Trypeta signata . *Meig. Europ. Zweiflug. Ins. V.* 332. 30.
Pl. XLIX. fig. 4.

Tephritis Hebe . *Newm. Ent. Mag. I.* 506.

Body clothed with black down and hairs ; head with a few black bristles, tawny above, paler beneath, black behind ; antennæ tawny, 3d joint red, flat above, convex beneath ; sides of thorax yellow ; metathorax shining ; legs tawny, clothed with black hairs ; wings inclining to yellow at the base, 1st band hardly seen, 2d shortened at both ends, 3d and 5th nearly reaching the lower border, 4th and 6th confined to the upper border ; nervures and poisers yellow, the former brown towards the tip of the wing. (Length of body $1\frac{1}{4}$ line ; of wings $2\frac{2}{3}$ lines.)

In the south of England during the summer ; but not common.

Musca marginata, Linn. is nearly allied to the genus *Urellia*, but has a larger scutellum, and the spots on its wings are altogether different.

Greyish tawny ; legs yellow ; wings white, spotted along the upper border and at the tip. (Fig. 18.)

Tephritis marginata . *Fullén, Dipt. Suec. Ortal.* 7, 8.

Trypeta marginata . *Meig. Europ. Zweiflug. Ins. V.* 322.
17. Pl. XLIX. fig. 15.

Body downy, clothed with white hairs ; head with a few bristles above (those in front black, those behind white), round the eyes and beneath white, behind black ; mouth and borders of peristoma

yellow; antennæ yellow, 3d joint darker; throat black; thorax with a few black bristles above, grey beneath; scutellum almost hiding the metathorax, which is brown; abdomen brown, that of the female with the hind borders of the segments yellow; telum black, of the female shorter than half the abdomen; wings at the base above slightly brown with three small darker spots; beneath the costa are three large black spots, often varied with little limpid circles, the 1st in the middle of the wing, nearly square, and often joined to the 2d, which is near the tip, and reaches the lower border; the 3d at the tip, irregular in shape; two small pale brown hardly seen spots on the middle of the 5th nervure; costa black, yellow at the base; nervures yellow, brown towards the tip of the wing; poisers pale yellow. (Length of body 1½—2 lines; of wings 3—3½ lines.)

Common in the south and west of England during the autumn.

URELLIA.—*Desvoidy.*

Distinguished by the white colour, the narrow peristoma, the prominent epistoma, the small scutellum, and the milk-white wings, with a star-shaped spot near the tip of each.

Body short, white, downy, clothed with white hairs; head rounded, narrower in front, with a few bristles above, those between the eyes black, those behind white; peristoma oval, long, narrow; epistoma prominent; mouth short, tawny; feelers yellow, not thickened; antennæ short, tawny, 1st joint clothed with white hairs, 3d almost oval, flat above, convex beneath; thorax with a few black bristles; scutellum small, short, semicircular, not prominent, nor hiding the metathorax; telum black, as long as half the abdomen; legs clothed with black and white hairs; stars in the wings varied with little white circles; nervures yellow, brown towards the end of the wing; poisers bright yellow.

Sp. 1. Urel. radiata. *Spots on the wings black.* (Fig. 19.)

Musca radiata *Fabr. Ent. Syst. Suppl.* 565. 157.

Musca alis macula radiata, &c. . . . } *Geoff. Ins. II.* 494. 3.

Tephritis radiata . . . *Fabr. Syst. Antl.* 319. 16; *Panz. Faun. Germ.* CIII. 21; *Fallén Dipt. Suec. Ortal.* 12. 19.

Trupanea radiata . . . *Schrink, Fauna Boica,* III. 2525.

- Tephritis terminata . *Fallén, Dipt. Suec. Ortal.* 13. 20.
 Trypetæ terminata et *Meig. Europ. Zweiflug. Ins. V.* 343.
 radiata } 47, 48. Pl. L. fig. 3, 10.
 Urellia calcitrapæ . *Desvoidy, Essai sur les Myodaires,*
 774. 1.

Head above pale yellow, with a curved black spot above the base of the antennæ; peristoma pale brown inside; 3d joint of antennæ brown above; legs yellow, thighs almost white; star on the wing black; a small black spot of the same colour on the middle of the 5th nervure; costa black, yellow towards the base of the wing. (Length of body $\frac{3}{4}$ — $1\frac{1}{4}$ lines; of wings 2— $2\frac{1}{2}$ lines.)

In the south and west of England during the autumn.

ACINIA.—*Desvoidy.*

Bands on the wings, broad, spotted, often passing into each other.

Body short, downy, hairy, varying in colour from saffron to black; head rounded, scarcely narrower in front, with some bristles above, those in front black, those behind white; peristoma angular, longer than broad, almost white; epistoma not prominent; mouth short, clothed with white hairs; feelers not thickened; antennæ short; 3d joint almost oval, flat above, with a slight notch before the tip, convex beneath; thorax clothed with white hairs and a few black bristles; scutellum short, almost semicircular, scarcely hiding the metathorax; abdomen clothed with black and white hairs, the former more prevalent at the tip; telum of the female broad, flat, gradually narrowing from the base to the tip, much shorter than half the abdomen; wings banded, the bands varied with numerous little limpid or white circles.

Sp. 1. *Acin. corniculata.* *Saffron colour, wings limpid, with four broad brown bands.* (Fig. 20.)

- Tephritis corniculata . *Fallén, Dipt. Suec. Ortal.* 8. 11.
 Trypetæ corniculata . *Meig. Europ. Zweiflug. Ins. V.* 335. 34.
 Acinia jaceæ *Desvoidy, Essai sur les Myodaires,*
 776. 1.

Dull saffron colour, paler beneath; head beneath yellow, and clothed with black and white hairs; mouth and antennæ yellow, 3d joint of latter rich yellow; metathorax reddish yellow; a hardly seen brown spot on the sides at the base of each abdominal segment; plates beneath reddish yellow; telum rust colour, of female black at the tip; legs pale tawny, clothed with black and white hairs; wings

limpid, slightly yellow at the base, with four broad united brown bands, varied with many tawny punctures; a small black spot joining the middle of the costa; nervures brown, yellow towards the base of the wing; poisers bright yellow. (Length of body $2\frac{1}{4}$ — $2\frac{3}{4}$ lines; of wings $4\frac{1}{3}$ — $4\frac{3}{4}$ lines.)

Found in England and Scotland during the summer.

Sp. 2. *Acin. parietina*. *Smaller and darker than corniculata, bands of wings more spread.* (Fig. 21.)

Musca parietina . . . *Linn. Syst. Nat. II.* 996. 107; *Faun. Suec.* 1863; *Gmel. Syst. Nat. V.* 2854. 107.

Tephritis pantherina . *Fallén, Dipt. Succ. Ortal.* 10. 14.

Trypeta parietina . . *Meig. Europ. Zweiflug. Ins. V.* 334, 33. Pl. L. fig. 7.

Smaller and darker than *corniculata*; head above saffron colour, beneath yellow and clothed with black and white hairs; mouth yellow; antennæ saffron colour; metathorax yellowish brown; abdomen spotted like that of *corniculata*; telum black; legs reddish yellow, clothed with black and white hairs; wings limpid, with a slight yellow tinge, branded like those of *corniculata*, but the bands are more spread, often over nearly the whole wing; a small black spot joins the middle of the costa; nervures yellow, brown towards the tip of the wing; poisers bright yellow. (Length of body $1\frac{1}{2}$ — $1\frac{3}{4}$ lines; of wings $2\frac{3}{4}$ — $3\frac{1}{4}$ lines.)

In a small variety of the male the 3d band of the wing disappears in front, and consequently does not join the 4th.

South of England, during the summer and autumn.

Sp. 3. *Acin. laticauda*. *Like parietina, but larger, wings more tinged with yellow, bands paler and more spread.* (Fig. 22.)

Trypeta laticauda . *Meig. Europ. Zweiflug. Ins. V.* 339. 41. Pl. L. fig. 11.

Head saffron-colour above, yellow and clothed with black and white hairs beneath; mouth yellow; antennæ saffron-colour; metathorax yellowish brown; abdomen spotted like that of *corniculata*; telum rust-colour, short and broad; legs reddish yellow, clothed with black and white hairs; wings limpid, tinged with yellow; bands tawny, very irregular, and often spread over the whole wing; a small spot joining the middle of the costa and the bor-

ders of the cross nervures brown; nervures yellow, brown at the tip or the wing; poisers yellow. (Length of body 2 lines; of wings $3\frac{1}{2}$ lines.)

Very rare in England.

Sp. 4. *Acin. heraclei*. *Dark tawny, wings limpid with two spreading black bands.* (Fig. 23.)

Musca heraclei . . *Linn. Syst. Nat.* II. 998; *Faun. Suec.* 1877; *Gmel. Sys. Nat.* V. 2858. 125; *Fabr. Ent. Syst.* IV. 354. 172.

Tephritis heraclei . *Fabr. Syst. Ant.* 277. 21.

Trypetta heraclei . *Meig. Europ. Zweiflug. Ins.* V. 338. 39.
Acinia plantaris . . *Desvoidy, Essai sur les Myodaires,* 778. 6.

Dark tawny, paler beneath; head tawny above, yellow and clothed with black and white hairs beneath; mouth and antennæ tawny; telum rust-colour, of the female black at the tip; legs reddish yellow, clothed with black and white hairs; wings limpid, slightly yellow at the base, with two spreading black bands, one through the middle of the wing, and inclining towards the tip below, the other near the tip, much broader; nervures yellow, their tips brown; poisers bright yellow. (Length of body 2— $2\frac{1}{2}$ lines, of wings $3\frac{3}{4}$ —4 lines.)

South of England, during the autumn.

Sp. 5. *Acin. leontodontis*. *Brown, wings white, with two broad black branching bands.* (Fig. 24.)

Musca leontodontis . . *Degeer, Ins.* VI. 46. 17. *Pl. II.* fig. 15—18.

Musca stellata *Sulzer, Ins.* 216. *Pl. XXVIII.* fig. 12. c; *Fuesly Schweiz. Ins.* 1125; *Panz.Faun.Germ.* XX. 23.

Musca parietina *Fabr. Mant. Ins.* II. 351. 96; *Sp. Ins.* II. 450. 79; *Ent. Syst.* IV. 350. 154.

Musca scabiosæ *Fabr. Ent. Syst.* IV. 361. 200.

Dacus scabiosæ *Fabr. Syst. Antl.* 278. 26.

Trupanea leontodontis . . *Schrank, Fauna Boica,* III. 2519.

Tephritis parietina . . *Fabr. Syst. Antl.* 319. 13.

Tephritis leontodontis . . *Fallén, Dipt. Suec. Ortal.* 9. 13.

- Trypetae leontodontis } Meig. *Europ. Zweiflug. Ins.* V.
 et confusa . . . } 335. 337. 35. 37. Pl. L. fig. 8, 9.
 Acinia claripennis . . . Desvoidy, *Essai sur les Myodaires*,
 778. 7.

Head tawny above, darkly brown behind, yellow and clothed with white hairs beneath; mouth, antennæ, and borders of peristoma tawny; throat dark brown; thorax tawny beneath; metathorax and abdomen greyish brown; underside of the former black and shining in the middle, of the latter tawny; telum black; legs tawny, clothed with black hairs, thighs greyish tawny, outer sides of fore-thighs clothed with white hairs; wings white, each with two broad black sprinkled branching bands, more or less diffused, often joined together in the middle; costa and nervures yellow, brown towards the tip of the wing; poisers yellow. (Length of body $1\frac{1}{2}$ —2 lines; of wings $3\frac{2}{3}$ —4 lines.)

In England and Scotland during the summer and autumn.

Sp. 6. *Acin. hyoscyami*. Grey, telum black, wings limpid with two narrow black bands. (Fig. 25.)

Musca hyoscyami . . Linn. *Syst. Nat.* II. 998; *Faun. Suec.* 1873; *Gmel. Syst. Nat.* V. 2856. 120; *Stew.* II. 262.

Tephritis hyoscyami . Fallén, *Dipt. Suec. Ortal.* 9. 12.

Trypetta hyoscyami . Meig. *Europ. Zweiflug. Ins.* V. 337. 38. Pl. L. fig. 2.

Grey, paler beneath; head tawny above, darker behind, yellow and clothed with white hairs beneath; mouth, antennæ, and borders of peristoma tawny; metathorax black and shining beneath; telum black; legs tawny, clothed with black hairs, thighs darker; wings limpid, inclining to white, each with two narrow black sprinkled bands joined to the upper border, one on the middle of the wing very short, the other nearer the tip, and reaching nearly to the lower border; disk of the wing with many little irregular dots; nervures and poisers yellow, the former brown at their tips. (Length of body $1\frac{3}{4}$ line; of wings $3\frac{3}{4}$ lines.)

Very rare in England.

Sp. 7. *Acin. flavicauda*. Greyish brown, telum rust-colour, wings limpid, each with two dark-grey branching bands. (Fig. 26.)

Trypeta flavicauda . . *Meig. Europ. Zweiflug. Ins. V.*
336. 36.

Aciniæ pedicularium } *Desvoidy, Essai sur les Myodaires,*
arctii et annulata } *776, 777. 2—4*

Tephritis Theora . . *Newm. Ent. Mag. I.* 506.

Head tawny above, pale yellow, and clothed with white hairs beneath, almost white round the eyes and in the grooves; peristoma bordered with yellow; mouth pale yellow; antennæ tawny, 3d joint yellow; thorax beneath, metathorax and abdomen grey, posterior segments of the latter with hardly seen spots on each side; telum dark rust-colour, of the female black at either end; legs tawny, clothed with black hairs; wings limpid, each with two broad sprinkled dark-grey branching bands, occupying almost the whole of the wing, their colour darker as they approach the costa, which, like the nervures, is black, changing to yellow towards the base. (Length of body $1\frac{1}{4}$ —2 lines; of wings $3\frac{1}{2}$ —4 lines.)

Common in the south and west of England, during the autumn.

Sp. 8. *Acin. absinthii*. *Dark grey, like flavicauda, but smaller, telum black, bands of wings more spreading.*
(Fig. 27.)

Musca cinereus . . *Harris, Exp. 75. Pl. XXI. fig. 11.*

Tephritis absinthii . *Fabr. Syst. Antl. 322. 30.*

Tephritis punctella. *Fallén, Dipt. Suec. Ortal. 13. 21.*

Trypeta absinthii . *Meig. Europ. Zweiflug. Ins. V.* 340. 42.

Acinia millefolii . *Desvoidy, Essai sur les Myodaires,* 777. 5.

Tephritis Alethe . *Newm. Ent. Mag. I.* 506.

Dark grey, almost black; head tawny above, pale yellow and clothed with white hairs beneath, white round the eyes and in the grooves; peristoma bordered with yellow; mouth pale yellow; antennæ reddish-yellow; abdomen hoary beneath; telum black; legs tawny, clothed with black hairs; coxae, trochanters, and thighs grey; wings with two dark grey bands joined together and reaching over the whole surface, varied with numerous little limpid spots and circles, darker towards the fore border; nervures brown, changing to yellow at the base of the wing; poisers bright yellow. (Length of body $1-1\frac{1}{2}$ line; of wings $2\frac{1}{2}-3\frac{1}{2}$ lines.)

Common in England and Scotland during the summer and autumn.

NOEETA.—*Desvoidy.*

Body much arched, scutellum smooth and shining, wings black, with limpid dots.

Peristoma rather longer than broad; epistoma not in the least prominent; mouth short; palpi moderate; 3d joint of antennæ very short, convex beneath, slightly concave above, and turned upwards at the tip, 6th joint long; thorax very convex; scutellum very smooth, shining, convex, semicircular, prominent, almost concealing the metathorax; abdomen much arched; telum convex, longer than half the abdomen, very broad at the base, suddenly narrow and compressed towards the tip; wings black, varied with numerous little limpid circles.

Sp. 1. Noee. guttularis. *Brown*; *scutellum, metathorax, and telum black; legs tawny, with black thighs.* (Fig. 28.)

Trypetta guttularis. . . . *Meig. Europ. Zweiflug. Ins. V.*
341. 44.

Noeetæ flavipes et brunicosa. *Desvoidy, Essai sur les Myodaires*, 778, 779. 1, 2.

Head tawny in front, with a few black bristles before and white bristles behind, beneath very pale yellow clothed with white hairs, rich brown behind; antennæ yellow; thorax rich brown, clothed above with white hairs and black bristles, and varied with little black spots round the bristles, and with some hardly seen brown stripes, pale tawny beneath; scutellum and metathorax black, shining; abdomen dark brown, almost black, clothed with tawny hairs; telum black; legs tawny; coxae and thighs black, the latter armed with black bristles; wings black, the disk with a few, the borders with many little limpid circles; nervures brown, yellow towards the base of the wing; poisers yellow. (Length of body $1\frac{1}{4}$ —2 lines; of wings $2\frac{1}{2}$ — $3\frac{2}{3}$ lines.)

Found but rarely in England and Scotland during the autumn.

ANOMOIA.^c

Has the 3d joint of the antennæ much longer and more cylindric, and the lower cross nervure of the wing much longer and more slanting than the other Tephritisites.

Body broad, flat, downy; head short, not narrowed or lengthened in front; peristoma six-sided, scarcely longer than broad, front

^c ἀνόμοιος, dispar.

side long, hind side short; epistoma not prominent; mouth short; feelers slender; scutellum prominent, semicircular, not hiding the metathorax; abdomen short, broad, nearly round, slightly arched; lateral plates beneath not much developed; telum of the female very short; wings ample; lower end of the longer cross nervure much inclined towards the tip of the wing.

Sp. 1. Ano. Goedii. *Grey; head tawny; legs yellow; wings limpid, with a black spot at the base, sending forth rays to the upper and lower border and to the tip of the wing.* (Fig. 29.)

Musca purmundus. Harris, Exp. 74. Pl. XXI. fig. 6.

Trypetta Goedii . Meig. Europ. Zweiflug. Ins. VI. 382. 64.

Head tawny above, pale yellow beneath, almost white round the eyes and in the grooves, with a few black hairs beneath, and still fewer black bristles above; above the base of the antennæ is a clear white curved spot, its front side notched in the middle; peristoma white; mouth tawny; feelers yellow; antennæ tawny, 3d joint dull red; thorax tawny, bearing a few black bristles, the disk brownish grey, with some half-effaced stripes; scutellum yellow; metathorax black, shining, its sides inclining to tawny; abdomen dark brown, tinged with grey, clothed sparingly with black hairs, tawny beneath; hind border of each segment hoary; telum black; legs yellow, clothed with black hairs; wings limpid, tawny at the base; a large black mark varied with a few little limpid dots reaches from the base nearly to the middle of the wing, and touches the fore but not the hind border; at the end of this are two black cross bands, one reaching the fore, the other the hind border of the wing; beyond these are two longer black bands, one straight passing by the longer cross nervure, and joining the lower border; the other curved, rising to the upper border, and accompanying it to the tip of the wing; nervures and poisers yellow, tips of the latter brighter. (Length of body 1½ line; of wings 4 lines.)

Very rare in England; found in August on a lime tree; near London.

EULEIA.^d

This genus differs from all the preceding by the 6th joint of the antennæ, which is smooth, and neither downy nor hairy; it has

^d Εὖ, benè, λευκός, lœvis,

the shape of *Anomoia*, but the lower cross nervure of the wing is short and straight.

Body smooth, shining; peristoma rounded, longer than broad; epistoma prominent; mouth hairy; lip bent; feelers stout; 3d joint of antennæ cylindric, rather long; scutellum prominent, semicircular, not hiding the metathorax; abdomen oval, of the male narrower than of the female; telum of female very short, scarcely reaching beyond the abdomen; wings ample.

Sp. 1. *Eul. onopordinis*. *Rust colour or dark brown; legs yellow; wings limpid, along the upper border of each a large brown mark, varied with limpid spots, and sending forth several branches to the lower border.* (Fig. 30.)

Musca cœsio *Harris, Exp.* 75. *Pl. XXI.* fig. 8.
Musca onopordinis . . . *Fabr. Mant. Ins.* II. 353. 125;
Spec. Ins. II. 455. 104; *Ent. Syst.* IV. 360. 198; *Gmel. Syst. Nat.* V. 2859. 252; *Stew.* II. 263.

Musca centaureæ . . . *Fabr. Ent. Syst.* IV. 360. 199.
Scatophaga onopordinis . *Fabr. Syst. Antl.* 210. 31.
Tephritis centaureæ . . *Fabr. Syst. Antl.* 322. 28.
Tephritis onopordinis . . *Fall. Dipt. Suec. Ortal.* 15. 25.
Trypeta onopordinis . . *Meig. Europ. Zweiflug. Ins.* V. 316. *Pl. XLVIII.* fig. 24.
Trypeta centaureæ . . *Meig. Europ. Zweiflug. Ins.* V. 324. *Pl. XLIX.* fig. 8.

Body varying from rust colour to dark brown, paler beneath; head tawny, with a few black bristles above, pale yellow or almost white beneath; mouth tawny; feelers and antennæ yellow; thorax clothed with a few white hairs and black bristles, a black dot on each side above the base of the wing, on the disk sometimes alternate dark and pale bands; scutellum sometimes yellow; metathorax black, shining, sometimes with a tawny stripe through the middle; abdomen clothed above with black hairs and a few black bristles; telum black; legs yellow, clothed with white and black hairs, the thighs also with some black bristles; wings limpid, a large brown changing mark covering the upper half of the wing, paler at the base, in it are four limpid spots of various sizes and shapes, and it sends four or five branches that join the lower border of the wing; nervures brown, yellow at the base;

poisers pale yellow. (Length of body $1\frac{1}{2}$ —2 lines; of wings $3\frac{1}{4}$ — $4\frac{1}{4}$ lines.)

Common in England; on currant bushes, hazel trees, &c. in the summer.

ACIDIA.—*Desvoidy.*

Desvoidy does not include this genus with his *Aciphoreæ*, but it can hardly be separated, though it is almost without their peculiar characters, and much resembles some of the *Sapromyzites*.

Body rather long and narrow, slightly shining; head round; peristoma large, angular, not longer than broad; epistoma scarcely prominent; mouth of moderate length; feelers not thickened; 3d joint of antennæ long and cylindric, 6th joint very downy; scutellum small, shining, prominent, semicircular, hiding no part of the metathorax, which is also shining; abdomen of the male convex, nearly cylindric, scarcely as broad as the thorax, rather narrower at the base; abdomen of the female broader at the base, narrower at the tip; telum very short; wings long and narrow; cross nervures straight and upright.

Sp. 1. Acid. cognata. *Tawny; wings limpid, with tawny or brown bands.* (Fig. 31.)

Trypeta cognata. Wied. Meig. *Europ. Zweiflug. Ins.* V. 315. Pl. XLVIII. fig. 19.

Acidia cognata . *Desvoidy, Essai sur les Myodaires*, 721. 2.

Body tawny, clothed with a few black hairs and bristles; head almost white round the eyes, pale yellow beneath, a white curved spot above the base of the antennæ; mouth yellow, clothed with white hairs; antennæ yellow; metathorax with a large black spot on each side; legs pale tawny, clothed with black hairs; wings limpid, each with an irregular pale tawny mark reaching from the base to the middle, where at the upper border is a square dark brown spot, beyond this a narrow tawny band darker above stretches across the wing, still nearer the tip is another band of the same size and shape, but brown at both ends, and from it a dark brown curved band runs along the upper border of the wing, and ends with the costa; nervures and poisers yellow, tips of the former darker. (Length of body $2\frac{3}{4}$ lines; of wings $5\frac{1}{2}$ lines.)

Rare in England; found in the autumn on ivy; near London.

Note.—The structure of the two following species is somewhat different from that of *cognata*.

Sp. 2. Acid. ? artemisiae. *Pale tawny; wings limpid, with five or six black spots.* (Fig. 32, 33.)

Musca perelegand *Harris, Exp. 74. Pl. XXI.*
fig. 5.

Musca artemisiae *Fabr. Ent. Syst. IV. 351. 162.*

Tephritis artemisiae *Fabr. Syst. Antl. 317. 5.*

Tephritis alternata et interrupta. *Fall. Dipt. Suec. Ortal. 5.*
3, 4.

Trypetæ artemisiae, alternata, *Meig. Europ. Zweiflug. Ins.*
continua, intermissa abrotani.) V. 312—314. Pl. XLVIII.
fig. 16, 17, 20, 21, 22.

Body pale tawny, with a few black bristles above, yellow beneath ; head round, almost white about the eyes and beneath ; peristoma white, nearly round, not longer than broad ; epistoma not prominent ; mouth yellow, clothed with white hairs ; palpi not thickened ; antennæ yellow ; 3d joint moderately long, nearly cylindric ; thorax above with three slender pale brown stripes, and a small black spot close to the base of each wing ; scutellum convex, moderate, triangular, obtuse at the tip, not hiding the metathorax, which is black and shining ; abdomen long, oval, very slightly arched ; telum very short, passing very little beyond the abdomen ; legs pale tawny, clothed with black hairs ; wings limpid, slightly yellow at the base, having four spots and the tip black ; 1st spot large, irregular, nearly square, joining the middle of the costa ; 2d small, surrounding the lower cross nervure ; 3d still smaller, round, below the fifth nervure ; 4th hardly seen, near the base of the wing ; nervures brown, yellow towards the base ; poisers yellow ; a variety has a 5th spot below the costa, between the 1st spot and the tip of the wing ; it sometimes joins the 2d, and thus forms a band across. (Length of body 2 lines ; of wings 4½ lines.)

May to July ; on grass in damp meadows ; near London.

Sp. 3. Acid. ? Zoë. *Bright yellow ; wings limpid, with two or three black spots.* (Fig. 34.)

Trypetæ Zoë. *Wied. Meig. Europ. Zweiflug. Ins. V. 315.*
Pl. XLVIII. fig. 14, 15.

Last comes the beautiful little Zoë, with its bright yellow body and black and white wings.

Body bright yellow, with a few black bristles above ; head round the eyes and beneath white ; mouth pale yellow, clothed with white hairs ; antennæ bright yellow ; thorax with three slender pale brown hardly seen stripes above and a lemon-colour stripe on each side ; metathorax black, shining ; abdomen clothed with black hairs ; telum rust colour ; legs yellow, clothed with black hairs ; wings limpid, slightly yellow at the base, with two large black spots, one nearly square, joining the middle of the costa, the other at the tip ; the female has a third narrower spot joining the upper border before the tip of the wing ; nervures yellow ; poisers bright lemon colour. (Length of body $1\frac{1}{4}$ — $1\frac{1}{2}$ line ; of wings $3\frac{1}{3}$ — $3\frac{2}{3}$ lines.)

May and June ; on grass in meadows ; near London.

ART. VI.—*Memoir on the Metamorphosis and Natural History of the Pinnotheres, or Pea-Crabs.* By W. THOMPSON, F. L. S.

IF we were to search out an instance amongst the *Crustacea*, best calculated to exemplify the employment of deep design, and admirable adaptation of an animal to the mode of life it was intended for by its benevolent Creator, I think we should find it in the *Pinnotheres*. No person who reads this memoir with attention, but must be convinced of these obvious truths, or insensible to the operation of a providence, which caters for the most insignificant creature with as much care as for man himself, and which shows the Supreme in his attributes of omniscience and omnipotence, here, as at every step we take in our investigations into the ample book of nature.

The species of this curious and highly interesting genus of crabs, of which the type is *Cancer pisum*, Linn. the *Pinnotheres pisum* of Latreille, &c., are exclusively parasitic, but unlike the more familiarly known hermit-crabs, which take up their residence in empty univalve shells, these find their way into the tenements of living bivalves, which the females never afterwards quit ; there they remain, feed, grow, receive the visits of the males, and breed. How wonderfully they are adapted to this mode of life is obvious on the slightest inspection : their small size, rounded form, without angles or projecting spines, the softness and yielding nature of their shell,

the delicacy of all their members, their extreme inactivity, are all circumstances which, on the other hand, render them more or less unfit for a separate existence; and yet some naturalists, and amongst them the intelligent and accomplished Cuvier, shut their eyes, as it were, to all these peculiarities, and pretend to doubt the leading points of their history, and imagine that it is only by accident we find these and other Crustacea within the bivalve shells! It is not because Pliny, in his voluminous compilation, appears to be at variance with himself, in his account of this animal, nor that because both ancients and moderns have embellished the subject with various imaginary conceits, that we are to discredit a circumstance so often noticed by competent observers, and that in various different species, and in both the Old and New World, and which indeed it is so easy to be convinced of by due investigation. No doubt, other crustaceous animals are occasionally found within bivalve shells, but this appears to be rare, and they are obviously of species which have a separate existence; not so the *Pinnotheres*, the females of which are *never found* in any other situation, but within living shell-fish, and the males but rarely, and this because they appear to go from shell to shell in search of unimpregnated females, at the season of their amours. To be convinced, let any person take a sweep with a dredge on any bank of old muscles, modioli, or pinnæ, where the *Pinnotheres* have been before observed, and almost every shell will be found to contain one full-grown female, some two, and others three, independent of young ones and males, which occasionally occur in common with the females, while not a single stray individual will be seen. As the fishermen at Cove often have recourse to those shell-fish for bait, I have had a pint, and upwards, of the pea-crab brought to me out of the muscles obtained in a few hauls of the dredge, and although so very abundant, I have myself dredged in every direction within the harbour, with a very fine net, and at all seasons, and never procured *a single specimen* of the pea-crab, either male or female, in this way, although crabs equally small (*Porcellanæ*) have been abundantly captured.

Aristotle, of all the ancients, is the only naturalist who has given us any correct notions of these animals; but as he probably did not investigate for himself, he seems to be in doubt, whether the *Pinnophylax*, or guardian of the *Pinna*, was a small shrimp, or a crab. Lib. V. cap. xv. A few lines further

on, he says, “ There breed in some shells white and very small crabs ; the greatest numbers are found in that species of muscle which have the shell protuberant (*Modioli*, no doubt) ; next in that of the *Pinnæ*, whose crab is named *Pinnotheres*. They are also found in cockles and oysters. These little crabs never grow in any sensible degree, and the *fishermen* imagine that they are formed at the same time with the animal they inhabit.” He also gives currency to the idea, that their lives are so dependent upon each other, that if the shell-fish loses its little crab, they shortly afterwards perish themselves. It would be idle to combat such palpable absurdities ; I shall, therefore, proceed to state what appears to be matter of fact.

The pea-crabs differ so much in the appearance of the two sexes, that it is not to be wondered at if they have been considered as forming distinct species by some of the most acute naturalists, a difference that results from that wonderful adaptation of the means to the end proposed throughout the whole of the creation. The females being of a domestic and indolent nature, adapted to live constantly enfolded within the soft mantle of the inhabitant of the shell, are soft and globular, with very short members ; the males, on the contrary, being erratic, and going from shell to shell, require a form and structure more calculated to make their way amidst banks of shells, and within the opening valves of such as favour the residence of their mates ; hence they are of a flatter form and firmer texture, of a smaller size, with long compressed members, and those adapted to swimming as well as running, being densely and deeply fringed ; their extreme activity, and the facility with which they swim, contrasting singularly with the remarkable indolence and inactivity of the other sex. This peculiar structure in the males may serve to explain that passage of Aristotle, from which Cuvier supposed that the Grecian philosopher intended a species of *Portunus*,—“ Cancelli autem qui perquam exigui in pisciculis reperiuntur, pedes novissimos latiusculos habent, ut ad nondum utiles sint, quasi pro pin-nulis aut remis pedes haberentur.”—*De Part. Anim.* Lib. IV. cap. viii., as quoted by Cuvier, in his *Diss. Crit. sur les Ecrivisses*.

As the females are found with an amazing group of ova under their abdominal plate, in spring, summer, and autumn, it is probable that they have several successive broods ; this circumstance renders it no difficult matter to select a number

of females with mature ova at any convenient time, and to preserve them alive in sea-water for a few days, or until the ova should hatch.

METAMORPHOSIS IN PINNOTHERES.

From several females selected and kept alive after the above manner, I had the satisfaction to see the ova hatch in great numbers under the form of a new kind of *Zoë*, differing from all those previously discovered, with the front and lateral spines deflected, so as to resemble a tripod. In this stage the minute animals are like all the *Zoea*, purely natatory, disperse themselves abroad, probably undergo a further change, and may be supposed to gain an easy access within the bivalve shells, before they lose the power of swimming. For a considerable time the young females are scarcely to be distinguished from the males, and in this stage both differ so much from the adult, as to render it probable that they have often been taken for individuals of a different species, as would appear to have been the case with Dr. Leach, whose figures of *Pinnotheres Latreillii*, in Mal. Pod. Brit. T. XIV. f. 6, 7, 8., refer to the young of his *P. pisum*; this, I find, is also the opinion of Montagu.

In what the food of the *Pinnotheres* consists remains to be determined, but must necessarily be, either the minute marine animals which flow in with the current of sea-water to the bronchia and mouth of the shell-fish, or the mucous secretions and ejections of the animal itself. The various notions entertained upon this subject, and upon the connexion subsisting between these two animals, may serve as an amusing conclusion to this outline of the natural history of the *Pinnotheres*, and cannot fail to excite our surprise, that such fables should ever have been written, quoted, and given credit to, by men of the character of Cicero, Pliny, Oppian, Hasselquist, &c.

"The *Pinna*," says Pliny, "is never found without its companion, which is called *Pinnotheres*, or by others, *Pinnophylax*; this is a little shrimp, in some places a small crab, which bears it company in order to partake of its food. The *Pinna* gaping wide, and showing her naked body to tempt the little fishes, they soon make their approaches, and when they find they have full license, grow so bold as to enter in and fill it; this being seen by the guardian shrimp, by a slight nip he gives the signal to the *Pinna*, who thereupon shuts her shell

and suffocates whatever it incloses, giving a share of the booty to her companion." — Pliny, Hist. Nat. Lib. IX. cap. xlvi. This history is nearly copied after Cicero de Nat. Deorum, Lib. II. cap. xlviii. Oppian has a conceit still more absurd, giving to the *Pinnotheres* a remarkable degree of ingenuity and dexterity, in supposing that it throws a small stone between the valves of bivalve shells, on finding them open, which preventing them from closing, enables it to devour the inhabitant! Hasselquist goes astray in another direction, and supposes the crab to go out and cater for the *Pinna*, and when it returns, to cry out for the shell to be opened !!

On a due consideration of the facts stated in the former part of this memoir, and reasoning from analogy, we may fairly conclude that the crab is altogether useless and quite unnecessary to the well-being of the shell-fish, and indeed attended with more or less inconvenience and annoyance, but that the shell-fish is absolutely requisite to the very existence of the crab, as much so, as all other animals to their respective parasites.

The species of this genus would merit a separate memoir, bearing in mind the discrepancies presented by their young and by the two sexes, which even misled the best Crustaceologist of the age, who mistook both the one and the other for so many different species, describing the young as *Pinnotheres Latreillei*, and the male as *P. varians*.—Mal. Pod. Brit. T. XIV. f. 9, 10, 11.

On this part of the Irish coast but two species have been hitherto observed, viz. *P. pisum* and *P. pinnæ*, the latter being found in *Pinnae* and *Modioli*. In the Mediterranean and Red Sea, some others are met with in the various species of *Pinnae*, and as some of these are $2\frac{1}{2}$ feet in length, we find their parasitic *Pinnotheres* to harmonize in relative size, being in these huge bivalves nearly as large as a pigeon's egg. In America, one species inhabits the *Ostrea virginica*. In the West Indies one has been discovered by the late L. Guilding, in a cell, near to the muscular attachment of the animal of *Turbo pica*! Many more will, no doubt, be added to the list of species already known, now that the attention of Naturalists has been directed to these singular animals.

From the statements of Aristotle and Pliny before alluded to, and those of a later date, by Forskal, Desc. Anim. p. 94, under the head of *Cancer custos*, of which he gives as the

habitat "Lohaja intra Pinnas nigras; in saccato raro," it is probable that some *Macrourous decapoda*, of an unknown genus, participates in the singular manners and habitudes of the pea-crabs.

It does not appear that the *Pinnotheres* are used as food anywhere except in the United States of America, where the species described by Mr. Say, under the specific name of *Pinnotheres ostreum*, and found in the common oysters of that country, is said to be "excellent food, and those who eat oysters seldom reject it. When the fresh oyster is opened in considerable numbers, the crabs are often collected and served apart for the palates of the luxurious."—Journ. Acad. Nat. S. Phil. Vol. I. p. 68. From this it may be presumed, that the bad consequences often arising from eating muscles, &c., and attributed to the presence of these animals, must be owing to other causes.

Fig. 1.

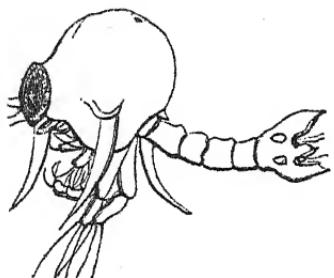


Fig. 2.

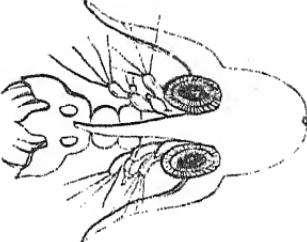


Fig. 3.

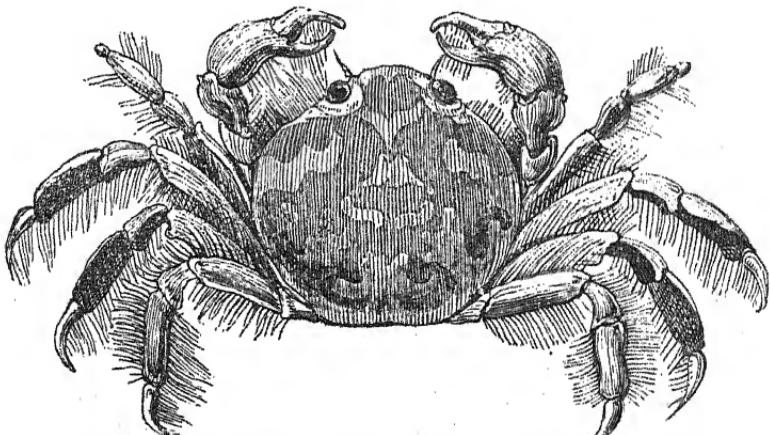


Fig. 1. *Zoea of Pinnotheres pisum magnified.*—Fig. 2. *The same in a front view.*—
Fig. 3. *Male of Pinnotheres pisum, or Pea-Crab, magnified.*

ART. VII.—*Insects found on Hampstead Heath.* By W.
E. SHUCKARD.

DEAR SIR,—It may not prove wholly uninteresting to your readers, particularly to those located in or near the metropolis, to be apprised, now that the season is about to commence, of what one particular district in its immediate vicinity promises them by the exercise of a due degree of assiduity. It has fallen to my lot to capture the following insects at Hampstead and Highgate. I do not pretend to give it as a *Fauna Insectorum* of that district, although it may be considered as a contribution thereto, for my attention was directed chiefly to the collection and observation of the habits of the *Aculeate Hymenoptera*. In this pursuit I have had, however, the good luck to introduce one or two entirely new things to the British lists; and I strongly advise every collector of the insects of Great Britain not to neglect a place which seems hitherto most undeservedly to have been very much overlooked, and which is, I dare say, as rich in the other orders as I have found it in my favourite one. What would the Aurelian say to the capture of Petiver's *Cynthia Hampsteadiense*? I certainly cannot promise him so much, but a friend of mine took, two years ago, within almost a stone's-throw of the Heath, that remarkable variety of *Vanessa Urticæ*, of which, I believe, only three specimens are known to exist.

In the list of Coleoptera I include those only which I consider my best captures. I have taken a great number of more common ones, with which it would be idle to swell the array, but in the list of the Aculeate Hymenoptera, I mention all that I have taken at the above place, and they will be found to constitute the majority of the known British species; and besides these, I have captured many new ones, which, as I have not yet named, I can merely indicate. The insects in *italics* were unknown as British until I took them, and I consider them very interesting additions to our Fauna. The list of the multitude of the species of *Tenthredinidæ*, and *Ichneumonidæ*, and *Diptera*, which I have not yet had leisure to examine and name, I will forward to you at some future time.

COLEOPTERA.

Lamprias chlorocephalus
Ocys tempestivus
Choleva angustata

Oiceoptoma thoracica

Tetratoma ancora
Cerylon Histeroides
Lyctus oblongus
Megatoma undata

Simplocaria semistriata

Onthophilus striatus
Onthophagus ovatus
Aphodius testudinarius
Hoplia argentea

<i>Necrobia quadra</i>	<i>Crabro albilabris</i>	<i>Nomada ruficornis</i>
<i>Corynetes violaceus</i>	<i>affinis</i>	<i>Fabriciella</i>
<i>Ptilinus pectinicornis</i>	<i>spinipectus</i>	<i>quadrinotata</i>
<i>Anthonomus</i>	<i>Diodontus tristis</i>	<i>flavoguttata</i>
<i>Striatum</i>	<i>luperus</i>	<i>rufocincta</i>
<i>Hylesinus Fraxini</i>	<i>minutus</i>	<i>Sheppardana</i>
<i>Cionus Scrophulariae</i>	<i>Xylaeus insignis</i>	<i>Dalii</i>
<i>Taumatomus Palliatus</i>	<i>gracilis</i>	<i>ferruginata</i>
<i>Brachytaurus scabrosus</i>	<i>corniculus</i>	<i>Sigmatia</i>
<i>Saperda cylindrica</i>	<i>Pemphredon lugubris</i>	and fourteen species not de-
<i>Tetrops praenusta</i>	<i>Cemonus unicolor</i>	terminable, by Kirby.
<i>Callidium Alni</i>	<i>lethifer</i>	<i>Melecta punctata</i>
<i>Toxotus meridianus</i>	<i>Mellinus arvensis</i>	<i>Caeciliys conica</i>
<i>Donacia Lemnae</i>	<i>Gorytes mystaceus</i>	<i>Stelis aterrima</i>
<i>denticipes</i>	<i>4-fasciatus</i>	<i>Megachile Willughbiella</i>
<i>sagittariae</i>	<i>libitharius</i>	<i>ligniseca</i>
<i>impressa</i>	<i>tunidus</i>	<i>ecutaneularis</i>
<i>Proteus</i>	<i>Psen bicolor</i>	<i>Anthidium manicatum</i>
<i>simplex</i>	<i>Equestris</i>	<i>Chelostoma maxillosa</i>
<i>Crioceris melanopa</i>	<i>Cerceris arenaria</i>	<i>Heriades campanularum</i>
<i>Mniophila muscorum</i>	<i>Odynerus (many species)</i>	<i>Osmia hirta</i>
<i>Cryptoccephalus moraei</i>	<i>Epipone spinipes</i>	<i>caeruleocephala</i>
<i>Cassida salicorniae</i>	<i>Vespa vulgaris</i>	<i>bicornis</i>
<i>Chilocorus 4-verrucatus</i>	<i>two apparently new</i>	<i>Eucera longicornis</i>
<i>Coccinella impunctata</i>		<i>Saropoda furcata</i>
<i>Mycetocharus scapularis</i>	<i>Rufa</i>	<i>vulpina</i>
<i>Ripiphorus paradoxus</i>	<i>Saxonica</i>	<i>subglobosa</i>
<i>Proscarabaeus violaceus</i>	<i>Germanica</i>	<i>Anthophora retusa</i>
<i>Megalodera thoracica</i>	<i>holstacea</i>	<i>Haworthiana</i>
<i>Pselaphus Heisseli</i>	<i>Andrena rosae</i>	<i>Apates rupestris</i>
<i>Bryaxis fossulatus</i>	<i>cingulata</i>	<i>campestris</i>
<i>Arropagus bulbifer</i>	<i>albicans</i>	<i>Barbutellus</i>
	<i>fulvescens</i>	<i>vestalis</i>
	<i>cineraria</i>	<i>Bombus muscorum</i>
	<i>nitida</i>	<i>floralis</i>
	<i>tibialis</i>	<i>Beckwithellus</i>
	<i>nigrozea</i>	<i>Sowerbianus</i>
	<i>bimaculata</i>	<i>Curtisellus</i>
	<i>Trimmerana</i>	<i>Hypnorum</i>
	<i>varians</i>	<i>Fosterellus</i>
	<i>helvola</i>	<i>sylvarum</i>
	<i>Gwynana</i>	<i>fragrans</i>
	<i>spinigera</i>	<i>Hortorum</i>
	<i>armata</i>	<i>Skrimpshiranus</i>
	<i>subdentata</i>	<i>soricensis</i>
	<i>fulva</i>	<i>terrestris</i>
	<i>Clarkella</i>	<i>lucorum</i>
	<i>Smithella</i>	<i>subinterruptus</i>
	<i>rufitarsus</i>	<i>Donovanellus</i>
	<i>fulvifrons</i>	<i>Burrellanus</i>
	<i>contigua</i>	<i>Cullumanus</i>
	<i>chrysocroceles</i>	<i>pradorum</i>
	<i>albicus</i>	<i>Derhamellus</i>
	<i>Shawella</i>	<i>Rajellus</i>
	<i>minutula</i>	<i>lapidarius</i>
	<i>nana</i>	<i>Harrisellus</i>
	<i>parvula</i>	
	<i>pilosula</i>	
	<i>xanthura</i>	
	<i>convexiuscula</i>	DIPTERA.
	<i>fusca</i>	<i>Haemotopota Italica</i>
	<i>Afzelilla</i>	<i>Bombylius major</i>
	<i>and forty species, which I can- not determine by Kirby.</i>	<i>Dioctria aestuans</i>
	<i>Clilsea tricincta</i>	<i>craboniformis</i>
	<i>Panurgus ursinus</i>	<i>Sybistroma (new species ?)</i>
	<i>Nomada Goodeniana</i>	<i>Sargus pallipes</i>
	<i>alternata</i>	<i>Chrysotoxum arcuatum</i>
	<i>Lathburiana</i>	<i>bicinctum</i>
	<i>flava</i>	<i>Criorhina Oxyceanthae</i>
	<i>rufiventris</i>	<i>Sciricomyia borealis</i>
	<i>Marshamella</i>	<i>Bucentes —?</i>
	<i>cornigera</i>	<i>Gasterophilus Equi</i>
	<i>subcornuta</i>	<i>Echinomyia grossa</i>
	<i>lineola</i>	<i>Tachina (several)</i>
	<i>sexcincta</i>	<i>Gonia aurifrons</i>
	<i>Schaeflerella</i>	<i>Musca (several)</i>
	<i>Jacobaeæ</i>	<i>Anthomyia (ditto)</i>
	<i>solidaginis</i>	<i>Uldia</i>
	<i>picta</i>	<i>Lissa dolium</i>

A goodly assemblage! will, I expect, be the exclamation of many upon seeing this list; but I honestly assure them, that every individual insect has been captured by myself within a circumference of less than five miles upon the Hampstead and Highgate district. I can promise them equal success if they will but work as hard as I have done. My only instrument has been a bag-net; and all my captures I secure in small pill-boxes, for I care not to say that I dread impaling an insect alive. If we allow ourselves extraordinary latitude in tracing systematic analogies, let us make one step further, and conceive analogies of feeling to exist;—if erroneous (as has strongly been endeavoured to be proved, but never satisfactorily) we certainly err on the right side—that of humanity—which I feel well rewarded for having respected, by the beautiful condition of the insects in my collection. I advise the collector not to be deterred by the fear of having this sentiment styled morbid, for it is a duty to be as summary as possible in the destruction of life, when it is rendered essential to the pursuit of science. The development of man's intellect is of more importance than the life of any subordinate creature, although for its attainment we are not privileged to give unnecessary pain by inflicting a lingering death. It is very evident that they possess feeling, although, perhaps, remote in its acuteness to our's; therefore, to refer the contortions of an impaled insect to mere impatience of restraint, is, I take it, a bitter sarcasm upon the obtuseness of our own sensibility.

I hope the above list will induce collectors to consider those places worth their attention, and I wish them more success than I have myself met with; but to insure it, they must be assiduous.

Yours, &c.

29, Grove Street, Camden Town.

W. E. SHUCKARD.

ART. VIII.—*Monographia Chalciditum.* By FRANCIS
WALKER.

“—— the green myriads in the peopled grass.”

(Continued from Vol. II., page 502.)

SECTIO IV. Fem.

Corpus breve, parvum: caput thorace paullo latius: mandibulae subquadratae, arcuatæ, dentibus 4 sat longis acutis armatae; dens 1^{us}. magnus, arcuatus; 2^{us}. 3^{us}. et 4^{us}. minores: maxillæ longæ, subarcuatæ: laciniæ angustæ, acuminatæ, intus lobatae; palpi 4-articulati, filiformes, graciles; articulus 1^{us}. mediocris; 2^{us}. paullo longior; 3^{us}. 1ⁱ. longitudine; 4^{us}. subfusiformis, 2^o. duplo longior: labium longiovatum, angustum; palpiger apice furcatus; ligula brevis, lata, ciliata; palpi 3-articulati, ligula vix longiores, extrosum crassiores; articulus 1^{us}. mediocris, 2^{us}. brevissimus, 3^{us}. longiovatus, 1^o. longior et crassior: antennæ graciles, fere filiformes, corporis dimidio multo longiores, apice vix crassiores; articuli 5^o. ad 10^{um}. curtantes; clava fusiformis, articulo 10^o. plus duplo longior vix latior: thorax ovatus: prothorax supra vix conspicuus: mesothoracis parapsides scuto in unum confusæ: metathorax brevis: abdomen ovatum, supra planum, apice paullo attenuatum, non compressum nec angulatum; segmentum 1^{um}. magnum; 2^{um}. et sequentia ad 5^{um}. brevia; 6^{um}. et 7^{um}. paullo longiora: oviductus abdomine occultus: alæ amplæ; nervus cubitalis radiali multo brevior.

Sp. 62. Pter. longicornis. Fem. *Viridi-aeneus, antennæ nigræ, pedes fulvi, alæ sublimpidæ.*

Viridi-aeneus, parum nitens: oculi ocellique obscure rufi: antennæ nigræ; articulus 1^{us}. fulvus: abdomen æneum; discus nigrocupreus; segmentum 1^{um}. viride, basi fulvum, apice æneo-cupreum: pedes pallide fulvi; coxae æneo-virides; meso- et metatarsi flavi, apice pallide fusi: alæ sublimpidæ; squamulæ et nervi flava, illæ apice fuscae; stigma fulvum, minutum. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ —1 $\frac{2}{3}$.)

Var. β.—Caput et thorax æneo-viridia.

Var. γ.—Caput viride: antennæ articulo 1°. apice fusco: thorax æneo-viridis: stigma flavum.

Var. δ. *Var. γ.* similis: antennæ articulo 1°. flavo: abdomen viridi-æneum.

Var. ε.—Caput et thorax viridia: pedes flavi; meso- et metatarsi pallidiores, apice fulvi.

Found near London.

SECTIO V. Mas et Fem.

Mas.—Corpus angustum, sublineare: caput thorace latius: antennæ subfiliformes, capitis thoracisque longitudine; articuli 5°. ad 10^{um}. subæquales; clava lanceolata, articulo 10°. duplo longior non latior: thorax longiovatus: prothorax brevissimus: parapsidum suturæ vix conspicuæ: abdomen depresso, basi ad apicem gradatim latescens, thorace multo angustius et paullo longius; segmentum 1^{um}. longum; sequentia breviora, subæqualia: sexualia exerta: alæ mediocres; nervus cubitalis radiali brevior.

Fem.—Caput thorace paullo latius: antennæ extrosum crassiores; articuli 5°. ad 10^{um}. paulatim curtantes et latescentes; clava articulo 10°. duplo longior et paullo latior, articulus 11^{us}. linearis, 12^{us}. 13^{us}. mucronem brevem abrupte acuminatum fingentes: abdomen ovato-lanceolatum, thorace latius et paullo longius, supra planum, subtus convexum, non angulatum nec compressum: oviductus occultus.

Sp. 63. Pter. subniger. Mas et Fem. *Nigro-æneus*, *antennæ nigro-piceæ*, *pedes fusco-slavi*, *femora viridia*, *alæ sublimpidæ*.

Mas.—Niger, obscurus, parum æneonitens: oculi ocellique rufi: os fulvum: antennæ nigro-piceæ; articuli 1^{us}. et 2^{us}. nigro-ænei: abdomen nigro-æneum, nitens: sexualia fulva: pedes fulvi; coxae et femora nigro-viridia: meso- et metapedum tibiæ fusco cingulatæ, tarsi flavi apice fusi: alæ sublimpidæ; squamulæ et nervi fusca, illæ apice obscureiores; stigma parvum.

Fem.—Antennæ basi caput et thorax nigro-viridia: abdomen nitens.
(Corp. long. lin 1—1 $\frac{1}{6}$; alar. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$.)

Var. β.—*Mas*, caput et thorax nigro-viridia: protibiæ et protarsi pallide fusca.

Var. γ. *Mas*, *Var. β.* similis: meso- et metatibiæ fuscæ, apice basique fulvæ.

Var. ♂.—Fem. mesotibiæ omnino fulvæ; metatibiæ fusco anguste cingulatae.

September; coast of South Devonshire and Cornwall.

SECTIO VI. Fem.

Corpus mediocre: caput thorace latius: antennæ graciles, extrosum crassiores, corporis dimidio paullo longiores; articuli 5°. ad 10^{um}. lineares, curtantes; clava longiovata, articulo 10°. duplo longior et manifeste latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax brevis: abdomen longiovatum, acuminatum, subtus carinatum, non angulatum nec compressum, thorace longius; segmentum 1^{um}. magnum; sequentia breviora, 2°. ad 6^{um}. longitudine crescentia: oviductus occultus: alæ mediocres; nervus cubitalis radiali multo brevior.

Sp. 64. Pter. latipennis. Fem. *Aeneo-viridis, abdomen purpureum, antennæ fuscæ, pedes flavi, alæ limpidæ.*

Aeneo-viridis, nitens: caput viride: oculi ocellique rufi; antennæ fuscæ; articulus 1^{us}. fulvus, apice fuscus: abdomen purpureum; segmentum 1^{um}. viride, basi cupreum, apice purpureum; 2^{um}. et sequentia basi æneo-viridia: pedes lœte flavi; coxæ virides; femora fulva; metatibiæ fulvo cingulata; meso- et metatarsi pallide flavi, apice fusi: alæ limpidissimæ; squamulæ et nervi flava, illæ apice fuscæ; stigma fuscum, minutum. (Corp. long. lin 1½; alar 2.)

Found near London.

Sp. 65. Pter. imbutus. Fem. *Antennæ quam præcedenti obscuriores, alæ minores.*

Cupreo-æneus, parum nitens: caput postice æneo-viride: oculi ocellique rufi: antennæ fuscæ; articulus 1^{us}. obscure fuscus, basi fulvus: abdomen viridi-cupreum; discus purpureus; segmentum 1^{um}. basi viride cupreо varium: pedes fulvi; coxæ et femora viridia, hæ apice flava; meso- et metapedum tibiæ fusco-cingulatae apice flavæ, tarsi pallide flavi apice fusi: alæ flavo-limpidæ; squamulæ et nervi flava, illæ apice fuscæ; stigma fulvum, parvum. (Corp. long. lin. 1½; alar. 1¾.)

September; Isle of Wight.

Sp. 66. Pter. mediocris. Fem. *Caput quam præcedentibus minus.*

Viridi-aeneus, parum nitens: caput thorace paullo latius: os fulvum: oculi ocellique rufi: antennæ fuscæ; articulus 1^{us}. fulvus, apice obscurior; 2^{us}. viridi-fuscus: abdomen purpureo-cupreum; segmentum 1^{um}. lète viride apice cupreum; sequentia basi viridia: pedes fusci; coxæ virides; femora apice flava; meso- et metapodum tibiæ pallide fusca apice flavæ, tarsi flavi apice fusci: alæ limpidæ; squamulæ et nervi flava, illæ apice fusca; stigma fulvum, parvum. (Corp. long. lin. 1½—1¾; alar. 1½—1¾.)

Var. β.—Antennæ articulo 1^o. fusco, basi fulvo: thorax æneo-viridis: stigma fuscum.

September; Isle of Wight.

SECTIO VII. Fem.

Corpus longum, angustum: caput thorace paullo latius: antennæ extrorsum crassiores, corporis dimidio vix longiores; articuli 5^o. ad 10^{um}. curtantes, sensim latescentes; clava longiovata, acuminata, articulo 10^o. duplo fere longior vix latior: thorax longiovatus: prothorax brevissimus; mesothoracis parapsides scuto fere in unum confusæ: metathorax brevis: abdomen subfusiforme, acuminatum, thorace multo longius, supra planum, subtus angulatum, non compressum; segmenta 1^{um}. et 6^{um}. sat longa, reliqua breviora: oviductus abdomine occultus: alæ mediocres; nervus cubitalis radiali brevior.

Sp. 67. Pter. spicatus. Fem. *Viridis, abdominis discus cupreus, antennæ nigrae, pedes flavi, femora fulva, alæ limpidæ.*

Lète viridis: oculi ocellique obscure rufi: antennæ nigrae; articulus 1^{us}. fulvus, apice nigro-fuscus: abdomen thorace angustius; discus cupreus; segmentum 1^{um}. cyaneo-viride, cupreo varium: pedes lète flavi; coxæ virides; femora fulva; tarsi apice fusci; protarsi pallide fulvi, apice obscuriores: alæ limpidæ; squamulæ et nervi flava, illæ apice nigrae; stigma minutum. (Corp. long. lin. 1½—1¾; alar. lin. 1¾—2.)

Var. β.—Abdomen purpureum; segmenta basi viridia, 1^{um}. cyaneo-viride apice purpureum; stigma fulvum.

Found near London.

ART. IX.—*Notes on a Review of Mr. Swainson's Preliminary Discourse on the Study of Natural History.* By EDWARD DOUBLEDAY.

SIR,—Well knowing how great a friend you are to fair criticism, I have not hesitated to send you the enclosed Notes, with a view to their publication in your next number. My object is, to illustrate the degree of candour and fairness with which Mr. Swainson's excellent Preliminary Discourse has been reviewed in the *Athenæum*.

Had that review emanated from a less respectable source I should not have noticed it; but when a periodical, so universally esteemed for the fairness and correctness of its remarks, deviates from the honourable course it generally holds, I do feel that it is incumbent on some one to notice it, and I only regret that it has not already been done by some one more competent than myself. I will not deny that there are some few trivial errors in Mr. Swainson's Discourse, some trifling omissions, but they are like spots on the sun, only conspicuous when beheld through mediums which magnify them, and shear off the bright rays from the other parts. But let me here say that I altogether exonerate the Editor of the *Athenæum* from blame; I believe that he has, unknowingly, been made the tool of some disappointed and rejected scribbler, or of some one,

“Blest with each talent, and each art to please,
And born to write, converse, and live with ease,”

can

“Bear like the Turk, no brother near the throne :
View him with scornful, yet with jealous eyes,
And hate for arts that caused himself to rise.
Like Cato, give his little senate laws,
And sit attentive to his own applause ;
Who, if two wits on rival themes contest,
Approves of each, but likes the worst the best;
Who but must laugh, if such a man there be,
Who would not weep if Atticus were he.”

ATHENÆUM. No. 366.
Nov. 2, 1834.

PRELIMINARY DISCOURSE ON
NATURAL HISTORY.

1. “Our author takes a fancy to deprecate Cuvier and the whole school of Comparative Anatomists, as if their labours had had no effect

1. “It is the transcendent genius he (Cuvier) has shown as a Geologist and Comparative Anatomist, that will perpetuate his name as long

on the progress of Zoology.—He estimates them exactly in proportion as he understands them."

as those sciences are cultivated."—P. 87.

See also p. 86.

"The incomparable (dissections of) Savigny."—P. 87.

"The exquisite and elaborate work of Poli on the Comparative Anatomy of the Mollusca, is alone sufficient to immortalize a name; and this unrivalled publication led the way to the valuable Memoirs by Cuvier on the same class."—P. 89.

2. "Mr. Swainson's facts are not accurate, and his bibliographic knowledge incorrect."—(Followed by the pompous announcement of two little known works of Merrem, and one by Caius, in 1570, upon Breeds of Dogs.)

2. Instead of two or three, the writer, *had he known of them*, could have enumerated near 200 books, which, in the "*Sketch*" of Zoology, Mr. Swainson must have purposely omitted, for they would have filled the volume.

3. Relations of analogy—"by which it appears the author *intends resemblance*; though we need scarcely stop to say these are matters totally distinct."

3. "Relations or resemblances, in the ordinary acceptation of the words, have long been considered as of two kinds, expressed by the terms *analogy* and *affinity*."—P. 182.

4. "Relations of analogy have chiefly been sought out by the exertions of himself and his brethren, and behold the specimens which he produces of the value of their labours.

'The eagle he is lord above,
The lion lord below,' &c.
'The zebra and the tiger,' &c.

"The fact, indeed, of the resemblance in all these cases, is perfectly undeniable; but no (collateral) proofs are to be drawn from them!"

5. "On another point we can be more positive.—We had the pleasure, this morning, of seeing a considerable number of the Sloanean insects; which we have Mr. Swainson's authority for asserting, cannot now, by any possibility, be in existence! To be as particular as

4. These are *popular* illustrations of what the writer actually admits to be resemblances—that is, *analogies*. The "specimens" of *scientific analogy* constantly appealed to, are those substantiated by Mr. MacLeay, in the circles of Lamellicorn insects, and by Mr. Swainson, in the Northern Zoology: of both which "specimens" the writer is truly or wilfully ignorant.

5. A quibble. The author's obvious meaning is, that the insects could not now exist in an entire, or even a tolerably perfect state; and this the writer confirms. Having seen these relics, he *knows* that they are *all* "ghosts"—broken wings, "a good deal faded in colour," as he

possible," &c.—one, a *Prionus*—“is the ghost of an insect.”

says; about 150 fragments, in short, of what was once a collection of 5,135 specimens, the number originally deposited “safely” in the British Museum.^a

6. (This, I presume, is intended for the mortal stab.)

“Mr. Swainson seems incapable of forming a just conception of the peculiar genius or merits of the men whom he attempts to describe. Pliny, without doubt one of the most learned men of antiquity;—Pliny, the very type of Encyclopaedists;—Pliny, whose works contain, as he himself informs us, extracts from more than 2,000 volumes; is characterised by Mr. Swainson as deficient in—what do you suppose, gentle reader?—in erudition! We fear (?) Mr. Swainson might have sought for this deficiency nearer home.”

6. “His (Pliny’s) voluminous works rather show us a compilation of other men’s thoughts and discoveries, than a selection of well-digested information or of original research. Amidst all the polished graces of diction, *great and diversified erudition*, and no inaptitude for occasionally describing with clearness and precision, we look in vain for the powerful genius and the originality of his great master Aristotle; and we at once perceive that Natural History, under the Romans, had made a retrograde movement.”—*Prel. Dis. p. 8.*

ART. X.—*List of Entomological Works.*

1. *British Entomology*; by John Curtis. Nos. 133 and 134, January and February, 1835.

2. *Illustrations of British Entomology*; by J. F. Stephens. Nos. LXIX. to LXXI.

3. *A Manual of Entomology, from the German of Dr. Hermann Burmeister*; by W. E. Shuckard, M. E. S. With Original Notes and additional Plates. No. I. Price 1s.—We have received the first number of this useful work, of which we venture to say, that it will materially extend the

^a Mr. Swainson has communicated to the Editor a little anecdote belonging to this subject:—In the year 1817, long before the present Zoologists of the British Museum (excepting Mr. Koenig) came there, I assisted my friend, Dr. Leach, one day, in picking out these “ghosts” of the Sloanean Collection, (then deposited in the dark under-ground vaults,) from among hundreds, nay, thousands, that were even then reduced to dust.” And yet this writer takes upon himself to inform Mr. Swainson upon his own personal acts!

taste for Entomology. Its cheapness (for the whole will be comprised in eighteen numbers, price 1*s.* each) will render more accessible a knowledge of the researches of Kirby, and of many celebrated French and German entomologists, from whose works Dr. Burmeister's Manual contains copious extracts. The present number is accompanied with two plates, illustrating the eggs, larvae, and pupæ of insects.

4. *Philosophical Transactions of the Royal Society of London*, 1. 1834. *Part II. On the Nervous System of the Sphinx Ligustri Linn. during the latter Stages of its Pupa and Imago State; and on the Means by which its Development is effected; by George Newport, Esq.*—This work, of which the first part was published in 1832, is illustrated by five plates, beautifully representing the anatomy of the insect.

5. *The Magazine of Natural History, &c.; conducted by J. C. Loudon, F. L. G. and Z. S. &c. No. XLVII. March, 1835.* 1. *Notice of the Ravages of Insects upon Barley and Turnips; by J. C. Farmer, Esq.: with Observations thereon, &c.; by J. O. Westwood, Esq., F. L. S., &c.* 2. *Illustrations in British Zoology; by George Johnston, M. D.*—In this latter article are figures and description of *Campontia eruciformis*, which is supposed to be the larva of some Dipterous fly; if this be the case, it is a solitary instance of a larva living in the sea.

6. *Outlines of Comparative Anatomy; by Robert E. Grant, M. D., &c. Part I. containing Osteology, Ligaments, and Muscles, illustrated with Sixty-five Woodcuts.* 1835.—We have been delighted with the perusal of this excellent work, and we earnestly recommend it to the attention of all lovers of Natural History.

7. *Histoire Naturelle des Insectes; par M. V. Andouin et M. A. Brullé.* 1834.

8. *Monographie des Passales et des Genres qui en ont été séparés; accompagnée de Planches dessinées par l'Auteur, où toutes les espèces ont été figurées; par A. Percheron.* Paris, 1835.

9. *Hymenopterorum Ichneumonibus affinum, Monographiae, Genera Europea et Species illustrantes; scriptis C. G. Nees ab Esenbeck, Dr. Volumen Secundum. Stuttgartiæ et Tubingæ, 1834.*
 10. *Iconographie, &c. des Coléoptères d'Europe; par M. le Comte Dejean, et M. le Docteur J. A. Boisduval. Tome IV. Livraison 7. Paris, 1834.*
 11. *Magasin de Zoologie; par F. E. Guérin. Paris, 1834.*
 12. *Iconographie du Règne Animal de M. le Baron Cuvier; par M. F. E. Guérin. Paris. Livraison 37. Insectes, pl. 15, 16, 17, 18, 19, 20, 51.*
 13. *Suites à Buffon, &c. Histoire des Insectes; Diptères par M. Macquart. Tome Premier. Accompagné de Planches. Paris. 1834.*
 14. *Die Wanzenartigen Insecten, &c. von D. Carl. Wilh. Hahn.; Zweiter Band, Fünftes Heft. Nürnberg, 1834.*
 15. *Die Arachniden, &c. von de Carl. Wilh. Hahn.; Zweiter Band, Viertes Heft. Nürnberg, 1834.*
-

ART. XI.—*Varieties.*

1. *Professor Studer's Cabinet and Books.*—We are requested to state that the representatives of the late Professor Studer, of Berne, wish to sell his cabinet of Insects. The collection is extremely complete in Swiss specimens, containing many that are unique; all are in a state of high perfection. There are about 4000 species, and 14,000 specimens. The *Lepidoptera* are all set on English needles, the *Coleoptera* on pieces of card, and every part displayed with a perseverance that cost the worthy possessor his eyesight. The collection remains at Berne, and may be seen on application to either of the present professors. The entomological works of the late professor are also for sale, including Cramer, Olivier, Degeer, Reaumur, Schœffer, Jurine, Stoll, Herbst, Rœsel, Esper, Lamarck, Huber, Meigen, Borkhausen, Ochsenheimer, Panzer,

Encyclopédie Methodique, &c. Applications for further information is to be made to M. le Pasteur Studer, at Erlenbach, canton of Berne.

2. *Vitality of Cœstrus Ovis.*—On the 26th of September last, being at Ventnor, in the Isle of Wight, I observed on the walls of the house a fine specimen of *Cœstrus Ovis*. Having captured the insect, I pierced it, and being about to leave for a day's excursion, I set the wings out, knowing that Dipterous insects generally die speedily. I believe I opened the box several times before my return to town, but the insect appeared perfectly still; at least I did not observe any thing to attract my attention. But, on the 8th of October, I was about to unpin the specimen and consign it to my cabinet, when, to my surprise, I found it still alive, and comparatively strong and active. Entertaining, as I do, the opinion that insects are not susceptible of much sensation, I am still averse from allowing them to remain pierced when they may so readily be deprived of life by the process described in Vol. II. p. 436; but in this case, I thought the fact so remarkable, that a departure from my ordinary plan, which had been unavoidably carried so far, might be permitted, for the sake of ascertaining to what extent vitality, under such circumstances, might exist. I examined the box day by day, and it was not till the evening of the 13th that I found the legs motionless; even then they were sufficiently pliable to be moved so as to set the insect out. I am not aware whether there is any instance on record of life enduring in an insect, especially of this order, for so long a period. Regarding its peculiar economy and habits, it appears to me to be an interesting fact, and affords, I think, a pretty conclusive argument against those who contend for “beetles and flies suffering as much pain as the human species, or the lower warm-blooded animals”—a doctrine so frequently to be met with in all and sundry the books written for the young on Natural History. It would be a curiosity indeed in physiological science could we hear of a man, pinned by a lancer’s spear to the earth, resisting hunger, cold, and pain, for sixteen days; or of a turnspit dog, who should be spitted in his turn, whining out his breath for a fortnight, without even the smell of the cookery to which he had been accustomed.

I trust it will not be thought that I am contending for the

practice of every insect to die by the pin. We may be inflicting a minor degree of suffering—though I think this extremely doubtful, and conceive that it would be almost as easy to persuade me that because the vegetable when cut, often pours out its juices and dies, that it also is conscious of suffering.

A. H. DAVIS.

3. *Bites of Insects*.—During the early part of November, a gnat alighted on one of my fingers, and coolly elevating its hinder pair of legs, very gently insinuated its set of lancets into my skin. I allowed the fragile phlebotomist to exercise her skill for a few seconds, but finding the process not particularly agreeable, I broke the whole set of lancets by a gentle pressure. I anticipated, from past experience, that the venom would produce a considerable inflammation, but no signs followed, and I concluded I had put a stop to her operations before the poison entered. Not the slightest degree of irritation followed for twenty-two hours, when a slight itching of the finger began at the precise point where the puncture was made; it increased considerably, and on the next morning I found the usual indication of a gnat bite, a small but conspicuous swelling, which continued to annoy me for some days. I was not before aware that so long a period elapsed between the bite and its effects.

Connected with this, I may mention a fact which occurred to me some years since; a specimen of *Stomoxys irritans* alighted on the fleshy part of my hand, between the fore-finger and thumb, and instantly pierced the skin; the first plunge of the lancets gave me some pain, but I was curious to watch the process; I took out my glass and endured the annoyance, watching the blood-thirsty wretch fill up each segment of its previously thin body. I waited and watched till it had gorged so plentifully as to let fall a drop of pure blood from the anal extremity; when not knowing but, like Munchausen's horse, it might continue to drink, merely making a canal of itself, I punished its trespass by summarily putting it to death.

A. H. DAVIS.

4. *Chlorops circumdata*.—The name of this insect was inserted by mistake in a list of described *Diptera*, new to Britain, in Vol. II. p. 439 of the Magazine.—ED.

THE
ENTOMOLOGICAL MAGAZINE.

JULY, 1835.

ART. XII.—*Discussion on the Luminosity of Fulgora Can-delaria, &c., at the Ninety-ninth Monthly Meeting of the Entomological Club.* (Mr. DAVIS in the Chair.)

(Concluded from page 57.)

MR. HOYER.—Mr. Chairman, I beg leave to second the amendment. I think the objections made by our learned friend, the author of the Letters of Delta, are any thing but sound. He sets out with attempting to throw a slur over the accuracy of Madame Merian; and brings forward, certainly, a very high authority to his support,—namely, Mr. MacLeay. The charge, notwithstanding all this, I think, will not stand the test of a cross-examination. Let us bring up the poor lady upon her defence, against these mighty Goliaths. Now, what says she?

“J'ai trouvé sur le Quajares, plusieurs grosses araignées noires de cette espèce, qui avoient leur domicile dans ce gros nid rond, qui représente le coccon de la chenille de la planche suivante, car elles ne filent pas des coccons longs, comme quelques voyageurs ont voulu me le faire accroire, et elles sont armées de dents aiguës, dont la morsure est très dangereuse, parcequ'elle y rependent, je ne sais quelle humidité. Les Fourmis, leur servent de nourriture, et elles les attrapent sur les arbres, ou elles les évitent difficilement parceque, comme toutes les araignées, elles ont huit yeux, &c. Quand elles ne trouvent pas de fourmis, elles arrachent des petits oiseaux de leur nids, et elles en sucent tous le sang.”

Here, then, is nothing about entangling the bird in the web ; and I conceive she has a right to retort upon her accusers. Her account I think rational ; and that so powerful an insect as she describes, when pressed by hunger, should attack the nest of the humming-bird, is, in my opinion, by no means improbable. That the old, or parent bird, would not become its prey, is likely ; but what resistance could a brood of young ones make in the absence of the parent bird ? Little or none, I expect, will be allowed ; and, therefore, under these circumstances, I see no reason to doubt her statement.

Now as to the fire-fly : any person reading her account of it, will readily perceive, that as to the larva of the insect, she writes in doubt ; and, consequently, with ambiguity. Her words are as follows :—

“ Les Indiens ont voulu me persuader que de ces mouches, provenoient les ‘Lantarendragers’ ou ‘Portes-Lanterue,’ qui sont tels que j’ai ici représenté,” &c.

Further on, she says, it is true :

“ Je conserve une de ces mouches, qui est prête à se transformer : elle a conservé toute la forme d’une mouche, n’ayant pas même changé ses ailes ; mais cette vessie, dont j’ai parlé, lui a crue à la tête,” &c.

Here it is pretty evident she may be at fault, and confounding the larva of the one with the other.

In describing the perfect insect, however, she is clear and distinct ; and its very local name (in my opinion, one of the strongest proofs of her correctness,) bears her out in her statement. In truth, a person reading her history of the insect, must feel it was next to impossible for her to make a mistake, unless it was a wilful one. To do so, she apparently could have no object ; therefore, until the author of the Letters of Delta brings forward something like clear and distinct proofs of her inaccuracy, I shall vote for the support of the poor slandered fire-fly.

MR. WALKER.—Mr. Chairman, I shall beg leave to address a few words to you in support of the motion of the author of the Delta Letters. Many kinds of *Fulgora* inhabit Africa and Asia. *F. candelaria* is very abundant in China ; and it is next to impossible, that their luminosity, if real, would have escaped the notice of the European residents, or that the natives would not have alluded to it by giving the insects some significant

name : yet that property has never been noticed in them, but frequently in *Lampyris*. In the last-mentioned genus, and in the phosphorescent *Elateres*, the luminous parts have a pale sulphur colour quite different from that of the rest of the body ; whereas the snout of *Fulgora* never shows the like peculiarity. Von Sack, in his "Voyage to Surinam," mentions three different species of insects there, which are called fire-flies. His description of *F. laternaria*, or the lantern-carrier, is probably copied from Merian. He adds : " On putting two of them in a glass, a common print may easily be read by it. It seems, that the real species is principally found in the mountainous parts of Guiana, and only appears there in the rainy season. I have not been able to procure a living one." He then describes *Elater* and *Lampyris*. Lacordaire observes, that at Cayenne, where the *Fulgoræ* are very rare, some of the inhabitants say that they emit a very brilliant light; others absolutely deny this fact. Having never seen the insects alive, he was obliged to remain in doubt. Spix and Martius often saw *F. laternaria* alive, but never observed any phosphorescence in it. The Indians call it *Jacarénam-boya*, or the crocodile-snake, and say that it inflicts wounds, and is extremely venomous. It flies swiftly, describing large circles, and appears chiefly in the evening on the sandy islands of the Amazon river. Its evening flight is an argument very much in favour of its being luminous ; but even allowing the luminosity, still it has a snout very different in shape from those of *F. candalaria*, and the rest of the species of the Old World ; and there is not the slightest authority for maintaining that these latter are luminous. As for common consent proving their luminosity, common sense proves that their luminosity would have been observed and talked of had it existed. It would be as rational to maintain that every *Elater* is luminous. I was astonished when I heard the author of the Letters of Rusticus talking about *common consent* ; he told us that the weasel sucked blood by *common consent* ; and that if a tail had been denied him by his first historian, he would be tailless by *common consent*. Common consent on subjects, means that the human mind has never thought about them till roused and freed from bondage by peculiar circumstances. Koempfer, in his History of Japan, tells us, that "the glow-worms (*Cicindelæ*) settle on some trees, like a fiery cloud, with this surprising circumstance, that

a whole swarm of these insects, having taken possession of one tree, and spread themselves over its branches, sometimes hide their light all at once, and a moment after make it appear again with the utmost regularity and exactness, as if they were in a perpetual systole and diastole." This was on the river Meinam. Of *Buprestis vittata*, in Japan, he says, "Another particular sort of Spanish flies is called *Fan-mio*; they are extremely caustic, and ranked among the poisons. They are found upon rice-ears, and are long, slender, and smaller than the Spanish flies, blue, or gold coloured, with scarlet or crimson spots and lines, which makes them look very beautiful." He thus describes another insect unknown to me:—"But the finest of all the flying tribe of insects, and which, by reason of its incomparable beauty, is kept by the ladies among their curiosities, is a peculiar and scarce night-fly, about a finger long, slender, round-bodied, with four wings, two of which are transparent, and hid under a pair of others, which are shining, as it were polished, and most curiously adorned with blue and golden lines and spots. They say that all other night-flies fall in love with it; and that to get rid of their importunities, it maliciously bids them (for a trial of their constancy) to go and to fetch fire. The blind lovers scruple not to obey commands; and flying to the next fire or candle, they never fail to burn themselves to death. The female is not near so beautiful as the male, but grey, or ash-coloured, and spotted." Howison, in his "Views of European Colonies," thus notices the West Indian fireflies:—"One species emits a flash of white light at regular intervals of two or three seconds; while the other, or larger kind (*Elater noctilucus*), displays two blazing spots of an emerald colour, and of unremitting brightness. The aborigines of Hispaniola are said to have employed the fire-flies of the latter sort to destroy the gnats and small insects which infested their huts, and also to give light in the evenings, and when they went abroad. In the last case, they would tie several fire-flies to their toes, and be guided by their light during a journey through the darkest woods. In the present day, the poorer inhabitants of Cuba often use as a lantern, a calabash pierced with small holes, and containing twelve or fifteen *Cucuyos*; these afford sufficient light for all ordinary purposes, but it is necessary to shake the vessel occasionally, in order that the concussion may excite the insects to give out

all their phosphorescence, which becomes feeble if they are allowed to remain long in a state of inactivity." I fear that all this will be considered unavailing as regards the emission of new light on the main question.

MR. NEWMAN.—Seeing that my friend, the Editor, presses the original motion, I shall think it my duty, Mr. Chairman, to press the amendment proposed by my friend, the author of the Letters of Rusticus. I was in hopes, when the author of the Letters of Rusticus so ably and clearly pointed out that the author of the Letters of Delta had in no way disproved the luminosity of our insect; and when my learned friend, seeing the weakness in this point of his otherwise masterly speech, requested of the Chairman permission to withdraw his motion; I was in hopes, I say, that the discussion would then have at once terminated. Great indeed was my surprise, when I heard the present Editor of the Magazine going over a series of interesting but intangible topics, and adducing inapplicable arguments, precisely similar to those of the author of the Letters of Delta, which the author of the Letters of Rusticus had already so ably refuted. I am compelled to say, that the speech we have last heard, however luminous, throws on our luminous subject but one solitary ray of light, and that ray has disclosed a fact which militates against the theory advocated by the speaker; I refer to that part of his speech in which the Editor produces evidence of the luminosity of the kindred species, *Fulgora laternaria*, and acknowledges that that point is proved. I am clear that the Editor, notwithstanding that shake of the head, and these words, "But even allowing the luminosity" of *F. laternaria*. Now *laternaria* being, by our friends opposite, thus acknowledged to be luminous, and *candelaria* being reported luminous, and not one tittle of evidence being adduced to the contrary, all the supposed intended negative evidence relating to *laternaria* alone, surely we shall be acting with undue precipitation if we venture to legislate on the subject at present; surely we shall be acting more safely and more wisely if we accede to the proposition of the author of the Letters of Rusticus, and adjourn the consideration of the subject *sine die*, leaving the author of the Letters of Delta at liberty to resume it whenever he shall have obtained more conclusive information. And now the strongest argument that I hear in favour of the change, is that of the present Editor,

who says, “*Fulgora candelaria* is very abundant in China; and it is next to impossible that their luminosity, if real, would have escaped the notice,” &c. Now, as not one writer or traveller has ever seen *Fulgora candelaria* alive, but only in boxes, and spitted on long needles, it is extremely probable that its luminosity would have escaped notice; at least, so it appears to me. I came here, not as a speaker, but as a listener; and I came, moreover, prepared to adopt what I considered the inevitable course of exchanging our old lamp, as in the story of Aladdin, for a new. I know well the opinion of the present and late Editors; and I know that that opinion was against the luminosity of our insect; my surprise was therefore a most agreeable surprise, when I found that opinion totally unsupported by the information which they had brought to bear on the subject. It is, therefore, with no view of supporting my own ideas—for you will recollect, Sir, the design of the fire-fly, and its accompanying motto, was my own—against the united voices of reason and truth, but from a sincere wish to establish truth by deferring the decision until we shall have incontestible evidence before us, that I now press the amendment. To me it has appeared very singular that these gentlemen should have shown so great a reluctance in approaching the real subject of inquiry. I had anticipated that they would have proved, beyond a possibility of doubt, that our emblem was an emblem of error, and our motto a motto devoid of meaning. But they shun the inquiry. Like the fisherman, who sailed his lugger round the very brink of Charybdis, avoiding with infinite dexterity the whirlpool that must inevitably have annihilated him, they have drawn a circle round the object of our inquiry, but carefully avoided making a nearer approach to it—for approach had surely been fatal—than the circumference of the circle which they have drawn. No one has been more delighted than myself in listening to the truly eloquent speech of the author of the Letters of Delta;—eloquent, because so pregnant with knowledge; and my delight has been the more ardent, because that brilliant speech has not dimmed for an instant the lustre of our fire-fly lamp.

In the extract which you read from Kirby and Spence, you must have observed, Sir, a very remarkable omission, and one for which it appears difficult to account, especially in the work of authors so scrupulously attentive to veracity and accuracy:

it is this ; that although these authors speak of the observations of travellers on trees studded with the lights of multitudes of *Fulgoræ*, yet no travellers, indeed, no traveller, is referred to, to whose works the inquirer might turn in order to examine, and duly weigh his evidence on the subject. I do not hesitate to say that I fully believe this omission accidental, not intentional. If the works of these travellers are nowhere to be found, then I acknowledge there will be some reason for fearing that our beacon-banner, like the manifold theories of the day, will become less palpable than the reflection of a nonentity, less substantial than the shadow of a shade.

The learned author of the Delta Letters dwells on the fictitious character of Merian's work, and laughs at the idea of her *Fulgoræ* being luminous in life, admitting, nevertheless, their luminosity after death. On this, the author of the Letters of Rusticus accounts for the luminosity of Merian's *Fulgoræ*, by supposing they were dead. Now we gain nothing by this, because we want to prove the luminosity of a living, not a dead, *Fulgora* ; for ours is the effigy of a fire-fly in the full blaze of his living and flying brightness. But surely the Doctor has ventured on a slight departure from history, when he endeavours to make it appear that Merian's fire-flies were dead ; for he will doubtless recollect, that it was on account of the great noise they made in fighting that the box was opened. Now I imagine that fighting and noise are rather at variance with the economy of dead insects. But waiving this unimportant discrepancy, there is something poetically beautiful ; and I could have wished to have wreathed the idea into verse, in the fact as recorded by the Frenchman, that the instant the spirit has departed, the body, instead of mingling with and becoming part and parcel of the earth, whence it originally sprang, dies but to assume a brighter being,—lighting up its own funereal pile, and truly possessing the “gilded halo hovering round decay.”

The Editor has treated the author of the Letters of Rusticus with great severity for using the expression—*common consent*. Now I am well aware of the Doctor's capability of self-defence, were the opportunity allowed him ; but as we are only allowed, Sir, to address you once on these occasions, excepting the right of reply always reserved for the proposer, I shall volunteer my services in his behalf. It appears to me the Doctor is not

only perfectly right, but perfectly consistent, in his observation on the two occasions which the Editor has pitted against each other. In the first instance, the Doctor expresses his contempt of that class of naturalists, who, having the real object daily before them, prefer examining it through the medium of a book, which, in ninety-nine cases out of a hundred, is a crude, ill-digested medley of the writings of others. Instead of following in the train, the Doctor prefers employing his own eye-sight. In the second instance, eye-sight is not available—assiduous watching and observation are entirely useless; had it not been so, I feel confident that the author of the Letters of Rusticus would not have appealed to "*common consent.*" If, at some future day, the Hong, and other merchants, Lords Commissioners of the Woods and Forests of the Celestial Empire, should allow the Doctor free ingress and egress; and if, after such privilege, we still find him referring us to "*common consent*" on the present question, I shall be much astonished, and shall most willingly acknowledge his inconsistency. In the mean time, I shall consider it perfectly justifiable to laugh at a fabulous account, attached by common consent to the weasel, and perfectly justifiable to pay respect to a fabulous account attached by common consent to the fire-fly of China. As regards the weasel, "*common consent*" certainly implies, as the Editor has well observed, "that the human mind has never thought about it till roused and freed from bondage by peculiar circumstances;" but as regards the fire-fly of China, common consent simply implies a belief in the observations of others, until we have an opportunity of making our own.

It has struck me as not a little remarkable, that the three speakers in favour of the proposed change—1st. The learned mover; 2d. the worthy seconder, whom I hope we shall one day see in the chair of the Entomological Society,—a society from which I regret having been compelled to withdraw, by an act which ostensibly emanated from the body; but which, I have subsequently found, the body not only disavow, but most severely condemn;—a society which I have laboured, and which I will labour, to serve, to the best of my abilities; and 3dly, the Editor of the Magazine.—It is a little remarkable, I say, that neither of these three have attended to the recent arguments of Dr. Hancock on the very

subject now under consideration,—arguments entirely in favour of their view of the subject; but I must say arguments, which, like their own, merely tend to show that it is difficult for us to prove the luminosity of *Fulgora candelaria*.

Sir, I, for one, refuse to submit to the line of argument throughout adopted; I most unhesitatingly insist, that the *onus probandi* lies with the mover of the alteration; we have chosen a course, we have selected an ensign and a motto, and it is with our opponents to prove that we are in the wrong, ere we shall think ourselves called on to extinguish the ensign, to desert the colours which we have so often led to victory, or to abandon the motto which we have so triumphantly wreathed around our brows. Let us nail our colours to the mast,—let us rally around them,—let us guard them with love and veneration. When we forsake or exchange them, we betray ourselves. Oh! as they have never been struck to the power of an enemy, it is my ardent, my sincere hope, they never may be lowered to gratify the fancies of a friend.

MR. BOWERBANK.—Mr. Chairman, I will just state that it is my intention to support the amendment. I think alterations of the kind now proposed always objectionable; and I must say that, on the present occasion, I have not heard one single argument advanced in favour of the change, but what has been fairly met, and completely overthrown by the supporters of the amendment.

MR. DAVIS — (*after a long pause, during which no one rose.*)—If Mr. Doubleday has any reply, now is the time. You will recollect, gentlemen, that Mr. Doubleday's reply closes the debate.

MR. DOUBLEDAY.—Mr. Chairman, my habitual deference to the learned author of the Letters of Rusticus and my unwillingness to press a proposal which might cause some little difference of opinion amongst our members, and disturb that harmony in which our debates are generally conducted, induced me to offer to withdraw my motion. I felt that I should be left in a minority, not because my cause was a weak one, but because I had no eloquence to oppose to that of the learned Doctor, and of my friend, the author of Sphinx Vesiformis, who, I was quite sure, would support the amendment directly I heard it proposed. I felt that I had against me the opinions of learned men, supported by the greatest talents and the greatest

eloquence amongst us ; and what had I to oppose to it ? I am not eloquent ;—I cannot use nice-turned phrases ;—I am not used to addressing an assembly like those now before me—

“ Mais quelque défiance
Que me doit donner la susdite eloquence,
Et le susdit crédit ; ce néanmoins, messieurs,
L'ancre de vos bontés me rassure. D'ailleurs,
Devant le grand Dandin l'innocence est hardie
Oui, devant ce Caton de Basse-Normandie
Ce soleil d'équité que n'est jamais terni.
Victrix causa Diis placuit sed victa latoni.”

The last four lines I must beg leave to translate thus. “ From the perfect confidence that I feel in the good sense of those I have the honour to address, and in the impartiality of our Chairman, I have no doubt that my want of eloquence to support a good cause will not injure it even when it has such opposition to contend with.” I must first reply to the learned author of the Letters of Rusticus, who talks so much of common consent. He first misrepresents the objects of my remarks, then ridicules them. In quoting the different authors to whom I referred, I had in view one thing, which was to prove that we have, in favour of the luminosity of *Fulgora*, only the authority of a woman, notorious for her falsehoods or blunders, (contradicted positively by more than one *correct* observer) ; whilst, on the other hand, we have a host of authorities to prove the brilliancy of the *Lampyrites* and *Elateres* in the tropics, and that therefore it was far better either to cut off the rays round our *Fulgora*, or to place on our title-page the figure of an insect undoubtedly luminous, rather than that of one whose luminosity was at the least, very, very doubtful. But the author of the Letters of Rusticus tells me it is luminous by common consent. *Common consent* of whom ? all the world ? No, forsooth, not of a thousand persons. Well, then, being luminous by common consent, it is so to be till proved not to be so. It is written in the History of Guatimala, composed by a monk of the name of Juarros, that in a certain province of what is now called Central America, there is a species of grasshopper, to the *exterior surface*, or outer coat, of whose stomach adhere certain little seeds like those of the passion-flower. These being sown, spring up and become a species of gourd, bearing little round fruit, the seed of which being next

year sown, produce good and fine melons. The insect, of course, is rare, but the common consent of the inhabitants of that part proves it to be true; and, therefore, it is true until some one proves, by direct observation, that there is no such insect.

"O medici medium pertundite venam!"

O most learned Rusticus, what hath befallen thee, to allow thyself to fall into such a train of reasoning? *Common consent* forsooth! Well, how many things have been believed by common consent, and are still believed by the multitude, which are false. Let the learned Doctor read Azara's *Quadrupédos de Paraguay*; let him there observe how many things reported by travellers, and believed by common consent to be true, are found to be false when examined by competent observers. Are we to believe, as the vulgar do, by *common consent*, that hedge-hogs suck cows,—that they go into orchards in the autumn, and curling themselves into a ball, roll about amongst the fallen apples, and thus carry them home to their winter hiding-place? Who is to prove a direct negative to this story?

But the Doctor has another argument. Dead *cicadæ* shine, therefore dead *Fulgoræ* may shine; certainly this may be. Is our fire-fly dead? No! she is alive, and,

"Non hiemes illam, non flabra, neque imbres
Convellunt; immota manet."

Why then should we put a *dead Fulgora* on the cover, or the title-page? Dead fish are luminous; but what would the Doctor have said, had our excellent friend, Yarrell, placed on the cover of his admirable *British Fishes*, a putrescent salmon? Thus much for our friend the Doctor. Our Editor has quoted a passage, which is a good specimen of the authority we have for the luminosity of *Fulgora*. "They are," says the author, "luminous, but I have never seen them alive." Then how does he know they are luminous? Who told him? I should say that he had read it in Merian, or had heard it from some one who had adopted the notion first broached by her ladyship. In the remarks made about *common consent* by the Editor I fully agree. My friend, the author of *Sphinx Vespidiformis*, who, on some occasions, has shown himself by no means slow in resolving, and acting too,

when circumstances required promptitude of resolution and action, now pleads for time and inquiry.

I have shown above the value of the evidence to which he alludes, when he asserts that one part of the Editor's speech proves that *F. laternaria* is luminous, (as for this being admitted by that speech, I heard no such admission); but as our friend said, granting this, conceding it to be proved, it does not prove that *candelaria* is luminous also. Now I am about to prove to the satisfaction, I doubt not, of my learned friend of the seven circles, that the human nose is splendidly luminous.

Perhaps I may first be allowed to read a few lines from our great dramatist:—

“ *Fal.*—Do thou amend thy face, and I'll amend my life: Thou art our admiral, thou bearest the lantern in the poop,—but 'tis in the nose of thee: thou art the knight of the burning lamp.

“ *Bard.*—Why, Sir John, my face does you no harm.

“ *Fal.*—No, I'll be sworn; I make as good use of it as many a man doth of a death's head, or a *memento mori*: I never see thy face, but I think upon hell-fire, and Dives that lived in purple; for there he is in his robes, burning, burning. If thou wert any way given to virtue, I would swear by thy face; my oath should be, By this fire: but thou art altogether given over: and wert indeed, but for the light in thy face, the son of utter darkness. When thou ran'st up Gadshill in the night to catch my horse, if I did not think thou had'st been an *ignis fatuus*, or a ball of wild-fire, there's no purchase in money. O, thou art a perpetual triumph, an everlasting bonfire-light! Thou hast saved me a thousand marks in links and torches, walking with thee in the night, betwixt tavern and tavern: but the sack that thou hast drunk me, would have bought me lights as good cheap, at the dearest chandlers in Europe. I have maintained that salamander of yours with fire, any time this two and thirty years; Heaven reward me for it!”

Now here we find it asserted by no less an authority than Shakspeare, that a man's nose was once luminous. We have no evidence to prove that all noses are not luminous, no one has ever denied their luminosity; *ergo*, they are luminous. I trust our opposition will admit the truth of this reasoning; or,

at least, will give time for inquiry. Our friend, the author of *Sphinx Vespidiformis*, says, that I avoid the subject; that I am fearful of inquiry, for that would prove fatal. Let me tell him I have no such fear, I wish for inquiry. Had not circumstances, which I cannot control, prevented me, I should now be *inquiring* into this point in the very country of *F. laternaria*. But my prospects have been blighted,—my hopes have faded away; and with these, all “the life of life has fled;” but yet sometimes, in my solitary wanderings through our forest, or whilst I rest myself on the stump of some old oak tree, my imagination calls up to my view the splendid scenery of tropical America, her vast rivers, her snowy mountains, her groves of palms, of *Lecythis*, of *Cavanilleria*, and a thousand other magnificent trees, intertwined by *Paulini*, *Banisteriæ*, *Passifloræ*, and *Bignoniæ*, with blue, crimson or golden blossoms, from which the humming-bird now pecks the tiny insect, now darts from them through the air,

“ Like winged flowers, or flying gems;”

and then a voice seems to whisper to me, such lands must thou visit—such scenes wilt thou find displayed before thee. O that these visions may be realized! O that they may not be a mere mirage of a mind enthusiastic solely on one subject! But I am wandering from my point. There have been those who have inquired, and of these no one has confirmed the statement of Madame Merian from his own observation; and one, the last, from his own observations, positively denies it. No doubt, when his forthcoming volume on the Natural History of British Guiana appears, we shall there find convincing proofs of the want of luminosity under which *F. laternaria* lies. But some day I shall observe these things for myself.

“ Si qua est Heleno prudentia si qua
Vati fides, animam si veris implet Apollo;”

and no one will rejoice more than I shall, if I find that I am now in error. I shall then think of my worthy friend, and exclaim, “O! that thou wert but with me.” Kirby, I will admit, speaks of the observations of travellers as to fire-flies, which he supposes to be *Fulgoræ*; but I doubt not that had he referred to these, we should have found their words equally applicable to the *Lampyriles* as to *Fulgoræ*. But the

venerable Father of Entomology, in this country, having his mind preoccupied with the idea of the luminosity of *Fulgora*, applied these vague expressions to them.

I rejoice to hear the author of *Sphinx Vesiformis* overthrow the reasonings of Rusticus about dead *Fulgoræ*, but he seemed very loth so to do. He wants them to be luminous when dead; I grant they may be so, and grant there is then,

“A gilded halo hovering round decay,
The farewell beam of beauty past away.”

But it is not immediately after the spirit has fled that this is to be observed. After death, those particles of the body, which the power of the genius of Rhodes has retained in subjection, now no longer subjected to his power, solve those bonds which he had imposed on them, and “Freed from their fetters, they follow with impetuosity, after a long privation, the impulse which leads them to unite themselves; and the day of death is to them a nuptial feast;” and from the chemical changes which now take place rises a phosphorescent light, which serves as a nuptial torch.

How can we be justified in ridiculing a fabulous account of an animal in our own country, and believing a fabulous account of another, because it comes from China? Lery, in his “*Historia Navigationis in Brasiliam quæ et America dicitur*,” has the following passage:—“Cæterum miserrimi nostri Barbari, in hac etiam vita miserè ab Cacodæmone torquentur (quem alio nomine Kaagerre vocant) ipse enim eos nonnunquam vidi etiam nobiscum colloquentes protinus instar phreneticorum exclamantes, ‘Hei! Hei! opem ferte nobis nos enim verberat Aygnam,’ immo affirmabant illi Cacodæmonem ab se conspici modò belluae specie, modo avis, modo etiam aliqua portentosa forma. Quia autem magnopere mirabantur nos ab Cacodæmone non infestari,” &c., and this he illustrates with a cut representing the Cacodæmone tormenting the Tououpinambaultii. Will my friend assert, that although it is perfectly just to ridicule ghost stories in England, we are to believe them when originating with a nation, the name of which is composed not of two but seven syllables, and which, besides, is some few thousands of miles from us. Perhaps as the country of the barbarians, with the name of seven syllables, is not so distant from us as is the Celestial Empire from the

country of the barbarians, who rejoice in the name of two syllables long only; this may have some influence, as distance seems much to add to the degree of belief we are to give to a story. What Dr. Hancock's arguments have to do with *F. candelaria* more than *F. laternaria*, I do not know; but this I must say, that they first called my attention to the subject, although I must own that it has always appeared odd to me, that a part supposed to secrete a luminous fluid should, in the dead animal, appear never to have had any trace of glands, but to be merely a continuation of the integuments, differing in nothing from those of the rest of the body.

Let the division this evening be what it may, I shall still adhere to my present opinion, not blindly and against positive evidence, but until some observer who is entitled to credit shall say, "I have seen a *Fulgora* actually alive, and shining;" or until I myself have seen one. And, Mr. Chairman, I do hold, that were we to place, instead of the *Fulgora*, the image of an *Elater*, or more properly, a *Pyrophorus*, surrounded with rays, radiating not from its nose, (like Bardolph's), but from its whole thorax, we should be acting more wisely than by leaving there the figure of an insect which only shines by common consent. Under these circumstances I must press my motion to a division.

MR. HANSON.—Mr. Chairman, although I was quite willing to second the motion of my friend, the author of the Letters of Delta, yet I must say that I did so, more that the subject might thereby gain a full and fair discussion, which, without a seconder, it could not have had. I willingly admit, that the learned disquisitions of my friend, the author of the Letters of Delta, and the present Editor, do bring authorities seemingly overwhelming in favour of *Elater* and *Lampyris*; nevertheless, retain the rays, say I; we are quite convinced of one thing, that the figure is emblematical, that the rays are ideal. We were quite convinced of this when we agreed on adopting the figure as it is: on these grounds, Sir, I shall vote for the amendment.

MR. DAVIS.—Gentlemen, in opening this discussion, I expressed my opinion, that a motion similar to that subsequently proposed by Mr. Doubleday, should have my approbation, provided the non-luminosity of the insect in question were clearly proved. I have paid every attention in my

power to the debate; and I must say that, as far as my own satisfaction is concerned, the non-luminosity of the insect in question is *not* proved. I am willing to divide the club on the amendment if desired, but it appears useless to do so. The amendment will be carried most certainly. Mr. Doubleday, do you still wish for a division?

MR. DOUBLEDAY.—There are several Entomologists who wish to have the subject definitely settled, and the present vote will set the matter completely at rest; because, supposing that I am beaten—of which there is no doubt—the question cannot, by the laws of etiquette, be again tried, while the club consists of the same members. As the meeting is a full one, and we have been very fully and fairly heard, I must say, that I think this opportunity for a final settlement of the subject ought not to be lost, and I therefore respectfully request the division.

MR. DAVIS.—Perhaps Dr. K—— will collect the signatures for the amendment, and some other gentlemen, also not a member of the club, those against it. The substance of the amendment, gentlemen, is, “That no alteration be made as regards the figure and motto in the wrapper of the Entomological Magazine.”

For the Amendment.

W. BENNETT,
C. S. BIRD,
J. S. BOWERBANK,
J. F. CHRISTY,
W. CHRISTY, JUN.
A. H. DAVIS,
SAMUEL HANSON,
J. HOYER,
EDWARD NEWMAN.

Against it.

E. DOUBLEDAY,
T. INGALL,
F. WALKER.

Majority Six.

ART. XIII. *Essay on Parasitic Hymenoptera.*

By A. H. HALIDAY, M. A.

(Continued from page 45).

Of the Ichneumones Adsciti.

SECTIO A.

Alarum anticarum areola disci-antica antice angulata.

Adnot.—*Ganychoris* hi propiores. Antennæ quam in Sectione B longiores: abdomen etiam minus compressum, in formam clavatam illorum transiens, a latere visum triangulare: alarum posticarum areola radialis parum remota.

Sp. 6. B. hastatus. Fem. *Niger, antennis et pedibus brunneis; alis fuscaneis; aculeo corpore breviore.* (Long. corp. $1\frac{1}{4}$; alar. $2\frac{1}{2}$ lin.)

Fem.—*Niger*: os brunneum: antennæ capite cum thorace longiores, articulis exterioribus decrescentibus at omnibus subcylindricis, brunneæ apice obscuriores: metathorax validè angulatus: abdomen linear-lanceolatum, segmento 1^{mo}. postice nonnihil dilatato: aculeus gracilis subarcuatus, corpore parum brevior: pedes villosi brunnei: alæ fuscaneæ, stigmate nervisque fuscis, squamulis piceis: areola radialis angusta, nervo cubitali ex angulo rectâ excurrente.

Habitat Angliam. (*Mus. J. Curtis.*)

Sp. 7. B. humilis. *Niger, pedibus brunneis; alis subhyalinis.* Fem. *Aculeo $\frac{1}{3}$ abdominis longitudine.* (Long. corp. vix 1; alar. vix 2 lin.)

**Bracon humilis* . *N. ab Ess. Berl. Mag.* V. 19. Sp. 26, t. 1. f. 4.

Blacus humilis . *N. ab Ess. Monogr.* 191. Sp. 3.

Fem.—*Niger*: os piceum: antennæ capite cum thorace parum longiores, articulis flagelli interioribus magis elongatis quam *B. trivialis*, exterioribus decrescentibus ovatis: metathoracis anguli parvi obtuse prominuli: abdomen compressum; segmentum 1^{num}. oblongum, apice perparum dilatatum: pedes graciles picei,

brunnei vel ochracei ; tibiæ et tarsi (apice demto) dilutiores : alæ subhyalinæ stigmate nervisque pallide piceis, squamulis piceis.

Var. β.—Duplo major (Long. corp. $1\frac{1}{4}$; alar. $2\frac{1}{2}$) : abdomen subclavatum parum compressum : alarum nervi validiores.

Var. γ.—Antennæ capite cum thorace non longiores, apice crassiores.

Mas.—Differt ut in reliquis.

Habitat Germaniam, *N. ab Ess.*—Hiberniam ; in spicis Cerealium Autumno frequens.

SECTIO B.

Parastigma majus, angulum areolæ disci-anticae præseccans.

Adnot.—His abdomen ubique fere compressum, a dorso visum lineare ; a latere trigonum, vel potius oblongum dorso areuato carinato : antennæ *fæminæ* latius moniliformes : areola radialis alarum posticarum longius remota.

Sp. 8. B. paganus. *Niger, pedibus piceoferrugineis.* Fem.

Antennis brevissimis moniliformibus ; aculeo $\frac{1}{3}$ abdominis longitudine. (Long. corp. $1\frac{1}{2}$ —2; alar. $3\frac{5}{4}$.)

Fem.—*Niger*: mandibulæ ferrugineæ : palpi picei, maxillarium articuli duo ultimi pallidi : antennæ capitis cum thorace longitudine, vel breviores ; validæ, moniliformes, apice non crassiores ; articulis flagelli interioribus adhuc brevioribus quam sequenti, exterioribus globosis, ultimo oblongo-ovato : thorax vase punctatus, pubescens ; scutellum confertius punctatum : metathoracis anguli obtuse prominuli : abdominis segmentum 1^{num} . subrectangulum, duplo longius quam latius, basi summa nonnihil constrictum : aculeus villosus $\frac{1}{3}$ abdominis longitudine : pedes validi piceo-ferruginei, tarsis apice fuscis ; antici dilutiores ; posteriorum femora medio, tibiæ apice, sœpe obscuriores : alæ albido-hyalinæ, stigmate nervisque fuscescentibus, vel ochreis tum costa et parastigmate obscurioribus, squamulis piceis.

Mas.—Notis ordinariis a *femina* differt.

Habitat in nemoribus minus frequens.

Sp. 9. B. trivialis. *Niger, pedibus ferrugineis.* Fem.

Aculeo $\frac{1}{3}$ abdominis longitudine. (Long. corp. $1\frac{1}{4}$; alar. $2\frac{1}{2}$ lin.)

Præcedenti similis : antennæ paulo longiores, versus basin sensim graciliores ; articulis exterioribus globoso-ovatis, ultimo oblongo :

metathoracis anguli productiores: segmentum 1^{mum}. paulo longius: aculeus $\frac{1}{2}$ abdominis parum longior: pedes graciliores, ferruginei apice summo tarsorum fusco: alarum stigma nervique pallidiores.

Mas.—Ut antea.

Habitat in nemoribus passim gregarius, omnium vulgatissimus.

Var. β.—Duplo major, *B. pagano* æqualis et similis: semel tantum lectus.

Adnot.—*Blacorum* species genuinæ tres mihi invisæ.—Bl. errans.

N. ab Ess. Mon. 190, Sp. 1.—Bl. longipennis, *ibid.* *Sp. 2.*—Bl. exilis, *ibid.* 191, *Sp. 4.*

GEN. IX. HELCON.

Palpi maxillares 6-articulati; labiales 3—4-articulati: caput transversum: abdomen subsessile: alarum anticarum areola disci-antica contigua completa; brachialis-posterior anteriorem parum superans: posticarum nervus recurrens unicus.

TABULA SYNOPTICA SUBGENERUM.

<i>Alarium anticarum</i> <i>areoleæ cavigitantes.</i>	<i>due: radialis</i>	cuneata angustissima	9. ORGILUS.
		subovata; 3-annulatum { aut fere abdomen } exannulatum { oblongum planum . . . 2. CALYPTUS. segmentis ordinariis discretis . . . 3. EUBADIZON.	1. TRIASPIS.
<i>tres:</i> <i>palpi labiales</i>	<i>3-articulati</i>	3-articulati	4. DIOSPILUS.
		4-articulati; <i>oris partes</i> { <i>haud elongatae</i> ; <i>frons</i> { æquata; { immarginatum . . . 5. MACROCENTRUS. occiput } marginatum . . . 6. ZELE. inæqualis mucronata . . . [7. HELCON.] parum elongatae [8. CARDIOCHILES.]	

Adnot.—Genus *Eubadizonta* quondam constituendum mihi proposu-
eram; his subgeneribus, *Triaspis*, *Calyptus*, *Eubadizon*, *Diospilus*:
postea ab *Helconte* nullum discriminem satis stabile deprehendi:
siquis tale excogitaverit, ita malleum ipse.

Subgen I.—TRIASPIS.^a

Palpi labiales 3-articulati : caput oblatum ; occiput marginatum : abdomen late sessile, ovatum fornicatum, rimulosum ; segmentis tribus subæqualibus, plus minus coalitis ; ventre concavo : alarum anticarum areole cubitales duæ ; radialis ovato-acuminata.

**Sigalpus. Fam. I. a.* . N. ab Ess. Berl. Mag. VII. 247.*

Sigalpus. Sectio I. . . Act. Acad. IX. 309.

— . . Monogr. 267.

Caput thoracis latitudine, oblatum suborbiculatum ; occiput marginatum ; vertex transversus rotundatus ; oculi mediocres ovati, glabri aut subglabri (ut in reliquis hujus Generis) ; facies planiuscula ; clypeus fere semicircularis, linea impressa utrinque foveolata discretus.—(Oris partes ex *H. caudato*) : mandibulæ curvatae, acute bidentes : labrum transversum rotundatum, fere semiovatum, epipharyngis ligula apicali attenuata prostante : maxillæ lobus distincte bipartitus ; lobi subæquales, exterior rotundatus, membranâ paulo firmiore : palpi maxillares breviusculi ; articulus 1^{mus.} et 2^{dus.} subæquales ; 3^{tus.} longior crassior obovatus ; 4^{tus.} adhuc longior ; 5^{tus.} 6^{to.} brevior et 2^{do.} æqualis (in *Sig. pallipede* autem secundum descriptionem, *N. ab Ess.* palpi longiores sunt, articulus 5^{tus.} 6^{to.} longior, 3^{to.} fere æqualis :) labium compressum, lobi apice sinuato : palpi labiales 3-articulati ; articulus 1^{mus.} et 2^{dus.} subclavati ; 3^{tus.} paulo longior, utrinque attenuatus : antennæ 19—28-articulatae, articulis exterioribus subovatis, rectiusculæ, corpore plerunque breviores in *feminis* saltem : thorax oblongo-ovatus ; prothorax inconspicuus ; mesothoracis sulculi ordinarii ante scutellum concurrentes ; metathorax truncatus, angulatus : abdomen thoracis longitudine, et eo ferme latius, ovatum, basi retusum, apice rotundatum ; fornicatum, rimulosum ; segmentis tribus subæqualibus, plus minusve coalitis ; reliquis conglobatis, infra ventrem concavum retractis, absconditis : aculeus exertus linearis : pedes mediocres, graciles ; calcaria gracilia : alarum anticarum stigma ovato-lanceolatum aut trigonum ; areola radialis ovato-acuminata, aut fere semicordata, longe ante apicem alæ clausa ; cubitales duæ, interior fere in medio nervum recurrentem excipiens : posticarum areola radialis parum remota ; brachialis-posterior $\frac{1}{2}$ anterioris longitudine.

^a *Triaspis, Tpeis et Aornis*, propter abdomen cataphractum triannulatum.—*Sigalphi* nomen vindicat Latreillii auctoritas, et jus antiquius.

Adnot.—*H. lepidus a charactere illo typico in pluribus recedit.*
Conf. *H. fasciatus.* No. 10.

Sp. 1. *H. T. lepidus.* *Niger, antennis basi subtus, ore pedibusque rufis, tibiis tarsisque posticis fuscis; abdomine obovato rimuloso.* Mas. *Facie genisque ferrugineis.* Fem. *Aculeo longitudine abdominalis.* (Long. corp. $2\frac{1}{2}$; alar. 5 lin.)

Caput thorace latius, crassum; genis convexis; oculis parvis rotundatis; facie latissima transversa: mandibulae sub clypeo fere reductae: palpi elongati, fere ut in *Calypto*; labialium articulus 3^{ius}. elongatus: antennae feminæ corpore breviore, 29-articulatae, dense pubescentes, apice revolutæ, articulis exterioribus brevissimis pateræformibus,—*maris* corpore longiores, gracillimæ, 31-articulatae: thorax antice posticeque magis attenuatus; metathorax rugulosus: abdomen longius, obovatum, intricato - rimulosum opacum; segmentum 1^{mum}. paulo longius quam latius, antrorum attenuatum, basi carinis 2 abbreviatis; 2^{dum}. subæquale; 3^{ius}. paulo brevius; sequentis margo subexertus: venter vix concavus, at carinatus, apice gibbus, rufo-pellucens: caput feminæ nigrum, ore ferrugineo, palpis pallidioribus; *maris* ferrugineum, vertice fronteque totis nigris: antennæ basi subtus late rufescentes; *maris* clarius ferrugineæ: prothorax hujus litura laterali fulvescente: pedes rufo-ferruginei, coxis concoloribus; postici validiores, tibiis fuscis basi pallidis, calcaribus minimis, tarsis dilutius fuscescentibus: alæ hyalinae stigmate fusco, nervis pallidioribus, radice et squamulis ferrugineis: areola radialis longior quam genuinis, oblongo-ovata apice attenuata: nervi axillari-recurrentis alterius rudimentum extat ante apicem areolæ brachialis-posterioris.

Habitat Angliam. (J. Curtis.)^b

^b †Sp. 2. *H. T. carinatus.* “*Ater, ore pedibusque rufis, tibiis posticis basi excepta nigris; abdominis*” obovati rugulosi “*segmentis 2^{do}. et 3^{io}.* subcarinatis. Fem. *aculeo recto longitudine dimidiis abdominalis.* (Long. corp. 2— $2\frac{1}{2}$ lin.)

Sigalphus carinatus . . . N. ab Ess. B. M. VII. 299. Sp. 1.
 _____ . . . Monogr. 267. Sp. 1.

Habitat Germaniam. N. ab Ess.

†Sp. 3. *H. T. semirugosus.* Fem. ‘*Ater, nitidus,’ antennis basi subtus, ore pedibusque totis rufis; abdominalis obovati segmento 1^{mo}. bicarinato et 2^{do}. punctulato-rugulosis, reliquis lèvissimis; aculeo abdominalis longitudine.* (Long. corp. 2 lin.)’

Sp. 5. H. T. caudatus. *Niger nitidus, pedibus piceis, tibiis rufescens; abdomine subtilissime rimuloso, segmento 3^{to}. sublævi nitidulo.* Fem. *Aculeo corpore longiore.* (Long. corp. 1; alar. 2½ lin.)

Sigalpus caudatus . *N. ab Ess. Berl. Mag.* VII. 250. Sp. 4.

Monogr. 268. Sp. 4.

Fem.—*Niger nitidus, subtilissime pubescens: mandibulæ rufescentes: palpi picei: antennæ corpore breviores, 19—21-articulatae: mesothoracis sulculi subtilissime punctulati; metathorax inæqualis, punctulatus: abdomen ovatum; segmentis 2 anterioribus subobscurus, subtilissime rimulosis; 3^{to}. paulo longiore, læviusculo nitidulo, ano rotundato: pedes picei, coxae nigrae, femora antica apice tibiæque rufescentes; tibiæ posticæ apice tarsique fusi: alæ hyalinæ stigmate fusco, nervis dilutioribus.* *Mas.*
Antennis longioribus.

Adnot.—Femora vix incrassata videnter in *femina*.

Var.—Major (Long. corp. 1½; alar. 3½) antennæ 23—25-articulatae: abdominis segmenta anteriora crassiùs rugulosa, obscura: aculeus corpore brevior: femora plerunque nigricantia: alarum nervi obscurius fusi. *Mas*, conformis.

Habitat Germaniam, N. ab Ess.—Angliam, Hiberniam, frequens.

Sp. 6. H. T. obscurellus. *Niger nitidus, pedibus fuscis, tibiis basi, anticis totis pallide rufis; abdomine subtilissime rimuloso, segmento 3^{to}. sublævi nitidulo.* Fem. *Aculeo longitudine abdominalis.* (Long. corp. 1; alar. 2½ lin.)

Sigalpus obscurellus . *N. ab Ess. Berl. Mag.* VII. 252.

Sp. 7.

Monogr. 270. Sp. 7.

Sigalpus semirugosus . *N. ab Ess. B. M.* VII. 249. Sp. 2. tab. VII. fig. 1.

Monogr. 267. Sp. 2.

Habitat Germaniam. N. ab Ess.

Adnot.—Hic et præcedens *H. lepidi* statu ram sectari videntur.

†Sp. 4. H. T. striatulus. “*Ater, pedibus rufis, palpis, coxis, trochanteribus femorumque basi fuscopiceis; abdomine obovato, ruguloso-striato, segmentis aquilibus.* Fem. *Aculeo longitudine corporis.* (Long. 1½ lin.)”

Sigalpus striatulus *N. ab Ess. B. M.* VII. 249. Sp. 3.

Monogr. 268. Sp. 3.

Habitat Germaniam. N. ab Ess.

H. caudati minoribus individuis simillimus: antennæ paulo breviores: abdomen paulo brevius sculptura pari: femora antica apice, tibiæ eadem totæ, posteriores basi summâ tantum, pallecentes.

Var. β.—Pedes sordide ferruginei; femorum margo superus, tibiæ posteriores apice tarsique obscuriores; coxæ et trochanteres picei.

Habitat Germaniam, *N. ab Ess.*—Hiberniam, in arenis maritimis copiose.

Adnot.—Adsunt etiam aliæ species binis antecedentibus affines, quum vero discrimen specierum lubricum sit, novas edere non placet, nisi copia major exemplarium in subsidium accesserit.

Sp. 7. H. T. fulvipes. *Niger pubescens, pedibus rufo-ferrugineis; abdominis rugulosi segmento 3^{to}. concreto lœvi.* Fem. *Ano rotundato; aculeo corporis longitudine.* (Long. corp. 1 lin.)

Signalphus pallipes . *N. ab Ess. B. M. VII. 251. Sp. 6. tab. VII. fig. 5.*

————— Monogr. 270. Sp. 6.

Est hic intermedius inter præcedentes et sequentem; ab illis, statura breviore, punctura crassiore, discrepans; ab hoc, abdome minus convexo, segmentis 3 subdiscretis, ano *feminæ* rotundato.

Marem feminæ genuinæ conformem communicavit amic. *Curtis*, nomine "fulvipes" adscripto.

Feminam possideo qualem *N. ab Ess. l. l.* ad calcem memoravit: forsitan distincta species; hæc itaque addenda videntur. (Long. corp. 1 $\frac{1}{4}$; alar. 2 $\frac{3}{4}$ lin.) Antennæ 23-articulatae, corporis longitudine, apice attenuatae: abdomen breve, postice dilatatum, ano obtuso subrotundato: segmenta tria satis discreta; 1^{um}. basi bicarinatum et 2^{dum}. rugulosa; 3^{um}. punctato - rugulosum: aculeus corpore brevior: palpi pedesque lœte rufo-ferruginei, coxis tantum fuscis: alæ *H. ambigu*, stigmate crassiusculo ovato, fusco.

Habitat Germaniam, *N. ab Ess.*—Angliam, Hiberniam.^c

^c †Sp. 8. H. T. obscurus. " *Niger obscurus, pedibus piceis, tibiis anticis totis, posterioribus basi rufis; abdomine obscuro, subtissime intricato-ruguloso, convexo, 1^{mo}. et 2^{do}. segmento subdiscretis.* Fem. *Ano emarginato; aculeo abdome breviore.* (Long. corp. 1 lin.)"

Signalphus obscurus *N. ab Ess. Berl. Mag. VII. 252. 8.*
————— Monogr. 271. 8.

Sp. 9. H. T. ambiguus. *Niger pubescens pedibus rufo-ferrugineis; abdomine convexo subintegro rimuloso.* Fem. *Ano emarginato; aculeo abdomine breviore.* (Long. corp. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Sigalpus ambiguus. N. ab Ess. Berl. Mag. VII. 253. Sp. 9. — Monogr. 272. Sp. 9.

Mas.—Niger parum nitens, pubescens et vase punctulatus: antennæ 22-articulatæ, apice attenuatæ: thorax brevis, antice gibbus; mesothoracis sulculis late confertim punctatis, lobo intermedio longitudinaliter depresso; metathorax perbrevis, angulis apicis acute elevatis: abdomen per breve, obovatum, convexum, totum confertim rimulosum opacum, postice lineolas longitudinale obsoleta levigata, basique obtuse bicarinatum: segmentorum omne discrimen fere deletum, ut in *Chelonis genuinis*: pedes breves, rufo-ferruginei coxis fuscis; postici crassiores, tibiarum apice tarsisque obscurioribus: alæ hyalinæ, stigmate crassiusculo ovato fusco, nervis pallidioribus; areola radialis major quam in *H. caudato* et affinibus.

“ *Feminae* anus profunde retusus, aculeus abdomine brevior.”

“ *Var. β.*—Pedibus fuscis, femoribus anterioribus apice, tibiis iisdem totis, posterioribus basi rufis.”

“ *Var. minor.*—Antennæ 20 - articulatæ: pedum colores ut in *Var. β.* tibiæ omnes concolores: alarum nervi pallidi.” N. ab Ess.

Habitat Germaniam. N. ab Ess.—Hiberniam; mas mihi bis lectus.

Subgen. II.—Calyptus.^a

Palpi labiales 3-articulati: caput latum oblatum; occiput marginatum: abdomen oblongum planum, segmentis 3; 1^{mo}. discreto, conico-attenuato; 2^{do}. et 3rd. magis coalitis, margine inflexo ventrem obtegentibus: alarum anticarum areolæ cubitales 2; radialis subovata.

Eubazus. A. H. H. Ent. Mag. I. 262.

Statura fere *Triaspidis*: caput thorace latius, pone oculos parum attenuatum: facies latior: antennæ basi distantes, longiores,

“ *S. ambiguo* simillimus; dimidio minor, abdominis punctura subtilior: segmenta connata quidem, sed 1^{mo}. et 2^{do}. linea transversa impressa angustissima lœvi indicata, hoc vero cum 3rd. intime conjuncto: pedes obscure picci, femoribus anticis apice, tibiis iisdem totis, posterioribus versus basin latiore aut breviore spatio rufis, tarsis fuscescentibus.”

“ *Habitat Germaniam.* N. ab Ess.”

^a Calyptus, a καλυπτω, propter ventrem vaginatum.

tereti-filiformes.—(Oris partes ex *H. tibiali*.) Mandibulæ sub clypeo arte forcipatæ, breves, apice compressæ, obtuse emarginatæ vel etiam subtruncatæ: labrum brevius, linearis-transversum, epipharynga trigonam apice attenuatam latiūs retegens: palpi maxillares longi; articuli 1^{mus.} et 2^{dus.} breves; 3^{tus.} linearis-cultratus; reliqui lineares, 4^{tus.} longissimus, 5^{tus.} et 6^{tus.} decessentes: labiales 3-articulati; articuli subæquales, 1^{mus.} obconicus, 2^{dus.} obovatus, 3^{tus.} subclavatus: metathorax magis attenuatus, declivis: abdomen thoracis longitudine et latitudine, oblongum planum; segmentum 1^{num.} discretum, antrorsum attenuatum, tuberculis prope medium; 2^{dum.} et 3^{tum.} æquata, lineolâ tantum subtilimâ discreta, quasi unicum maximum conficientia, cujus margines inflexi ventrem obtegunt, alter alteri in medio late superimpositus, relicto inter apices eorum obliquos sinu anali profundo, intra quem reliqua segmenta conglobata et retracta latent: ex hoc sinu prodit *maris* stylus obtusus compressus, *feminæ* aculeus linearis exertus: pedes postici validiores; calcaria perparva: alarum anticarum stigma ovato-lanceolatum; areola radialis oblongo-ovata, alæ apicem propius accedens.

Conf. Eubadizon macrocephalus. N. ab Ess. Mon. 234. 1.

Eubadizon coxalis 235. 3.

Sp. 10. *H. C. fasciatus. Niger, pedibus piceo-rufis, coxis nigris; alis obscuris, litura hyalina sub stigmate; abdome perbrevi. Fem. Aculeo abdominis longitudine. (Long. corp. 1 lin.)*

Sigalpus fasciatus . N. ab Ess. B. M. VII. 250. Sp. 5.
Monogr. 269. Sp. 5.

Exemplar femellum unicum male asservatum adest, at de specie vix dubius sum.—Antennæ mutilatæ, sed articuli qui supersunt breviores quam cæteris: palpi breves: mandibulæ rufæ: thorax et abdomen brevia; segmentum 1^{num.} latum rugulosum; 2^{dum.} et 3^{tum.} conjunctim parum longiora quam latiora, subæqualia: aculeus deflexus: pedes breves, piceo-rufi, coxis et trochanteribus nigris; tibiæ posticæ apice tarsique obscuriores: alæ obscuræ, absque litura hyalina manifesta: areola radialis brevior q. c. ovato-acuminata.

Mas.—Mihi in visus, differt in pluribus secundum descriptionem N. ab Ess. l. l.: abdomen totum læve: pedes obscuriores; postici elongati incrassati, fere toti fusi: alæ albido-hyalinæ,
NO. II. VOL. III. S

fasciâ mediâ latâ fuscescente plus minusve distinctâ, lineolâ hyalinâ e stigmate transcurrente.

Habitat Germaniam, *N. ab Ess.*—Angliam.

Sp. 11. H. C. puber. Mas. *Niger pubescens, pedibus ferrugineis, coxis basi nigricantibus; tibiis tarsisque posticis fuscis, illis basi ferrugineis; segmento 1^{mo}. brevi valido, punctato-ruguloso.* (Long. corp. 1½; alar. 4 lin.)

Mas.—*Niger nitidus, confertim albido-pubescentis: mandibulae basi nigrae: labrum ferrugineum: antennae 31-articulatae, corpore longiores: metathorax punctatus, lineis elevatis areatus, area media quinque-angulari: abdominis segmentum 1^{num}. haud longius quam apice latius, basi vero duplo angustius, punctato-rugulosum, angulis baseos obtuse carinatis, tuberculis obsoletis; reliqua vage punctulata, albido-pilosa; 2^{dum}. 1^{mo}. fere duplo longius; 3^{tum}. apice rugulosum: pedes ferruginei; coxae basi, posticæ supra, nigro-fuscæ; tibiae posticæ fuscae basi late ferrugineæ; tarsi apice, posteriores fere toti fuscescentes: alæ obscure hyalinæ, stigmate nervisque fuscis: squamulæ piceæ, margine rufescentes.*

Habitat in nemoribus prope Senanum lectus rarius.

Sp. 12. H. C. tibialis. *Niger pubescens, pedibus ferrugineis, coxis basi nigricantibus; tibiis tarsisque posticis fuscis, illarum summa basi ferruginea; segmento 1^{mo}. longiusculo, ruguloso, lateribus angulato.* Fem. *Aculeo corporis longitudine.* (Long. corp. 2; alar. 4 lin.)

Præcedenti simillimus, paulo gracilior: *feminæ* antennæ corporis longitudine 30 - articulatae: segmentum 1^{num}. sesqui-longius quam latius, rugulosum, tuberculis ante medium prominulis; reliqua levissima, minus elongata quam illi et subtilius pilosa: tibiae posticæ fere totæ fuscae: coxae posticæ nonnunquam apice tantum ferrugineo: alæ fumato-hyalinæ lineola hyalina obsoleta, stigmate nervisque fuscis, radice et squamulis ferrugineis.—*Mas.* Antennæ corpore ¼ longiores, 32-articulatae.

Habitat in nemoribus Hiberniæ borealis lectus rarius.^e

^e †Sp. 13. H. E. macrocephalus. Fem. “*Ater, nitidus, pedibus piceo-rufis; abdominis segmento 1^{mo}. rugoso; alis hyalinis; aculeo corpore sesquiallongiore.* (Long. corp. 1½—2 lin.)”

Eubazus macrocephalus. *N. ab Ess. B. M. VI.* 215. Sp. 1.

Eubadizone macrocephalus. ————— Monog. 234. Sp. 1.

Habitat Germaniam, *N. ab Ess.*

Subgen. III.—EUBADIZON.

Palpi labiales quasi 3-articulati: caput latum oblatum; occiput marginatum; facies planiuscula: abdomen lineare, segmentis ordinariis discretis, 1^{mo}. longiusculo parum attenuato: alarum anticarum areolæ cubitales duæ; radialis subovata.

*Eubazus *N. ab Ess. Berl. Mag.* VI. 214.
Gen. VII.

Eubazus (partim) . . . *N. ab. Ess. Act. Acad.* IX. 307.
Gen. IV.

Eubadizon, Sectio I. . . *N. ab Ess. Monogr.* 233. Gen. IV.
Charmon *A. H. H. Ent. Mag.* I. 262.

Statura fere *Calypti*, plerunque vero gracilior: pedes graciliores, postici haud incrassati: abdomen lineare, segmentis 8, omnibus aut plerisque discretis; 1^{mo}. longiore, basi parum angustato, tuberculis inter basin et medium: venter *feminæ* compressus, carinatus.

Sp. 14. H. E. semistriatus. *Niger nitidus, ore pedibusque flavo-ferrugineis; abdominis segmentis 2 anterioribus subtiliter rugulosis.* Fem. *Aculeo corpore sesqui-longiore.* (Long. corp. 1 $\frac{1}{2}$ lin.)

Eubazus pallipes, fem. . *N. ab Ess. B. M.* VI. 215. Sp. 2.

Eubadizon pallipes . . — *Monogr.* 235. Sp. 2.

Mas.—Antennæ graciles, corpore parum longiores, 28-articulatae, scapo et pedicello subtus ferrugineis: mandibulæ parvæ fere occultæ, cum labro palpisque flavo-ferrugineæ: clypeus parvus semieircularis: mesothoracis sulculi punctulati; metathorax confertim punctatus: abdomen thorace vix angustius, lineare planum; segmentum 1^{num}. $\frac{1}{4}$ totius longitudine, sesqui-longius quam latius, tuberculis angulatis ante medium sitis, confertim rugulosum; 2^{dum}. illo brevius, ruguloso-striatum, margine laterali tenui discreto lœvi; reliqua decrescentia, lœvia, incisuris vix discretis; 2^{dum}. et 3^{num}. conjunctim sequentibus paulo longiora: forceps magnus conchiformis e sinu lato anali prodit: pedes flavo-ferruginei; margo apicalis tibiarum posticarum tarsique idem fere toti fuscentes: alæ hyalinæ, stigmate nervisque fuscis, radice et squamulis ferrugineis: areola radialis apice acuminata: posticarum areola brachialis-posterior $\frac{2}{3}$ anterioris longitudine.—*Feminam* non vidi.

Habitat Germaniam, N. ab Ess.—Angliam, J. Curtis, (Mus. J. Curtis.)^f

Sp. 16. H. E. flavipes. *Niger nitidus, pedibus flavo-ferrugineis; abdominis segmento 1^{mo}. bicarinato, reliquis lærissimis.* Fem. *Aculeo corpore longiore.* (Long $1\frac{1}{3}$ — $1\frac{2}{3}$; alar. $2\frac{1}{2}$ —3 lin.)

Statura fere sequentis, sed abdomen, antennæ pedesque breviores. Fem. Antennæ corpore breviores, filiformes, 21-articulatae, articulo ultimo magno oblongo.—Oris partes ab illo non multum discrepant: labrum tenuissimum, linearis-lanceolatum, haud sinuatum: palpi multo breviores; maxillarium articulus 1^{mus.} basi attenuatus et curvatus, 2^{do}. longior: labialium articuli subæquales; 1^{mus.} obconicus, 2^{dus.} obovatus, 3^{ius.} utrinque attenuatus; articuli penultimi minutus qualis in illo deprehenditur nullum vestigium.—Mesothoracis sulculi impunctati; metathorax areatus, vage punctulatus: abdomen thorace angustius et vix longius; segmentum 1^{mum.} plusquam $\frac{1}{3}$ totius longitudine, tuberculis parvis inter basin et medium; dorso carinis 2 acute elevatis, postice approximatis, interstitiis vix striolatis; reliqua lærissima, 2^{dum.} et 3^{tiuum.} vix discreta, conjunctim 1^{mo}. æqualia, reliqua brevissima: venter carinatus, pallido pelluceus; aculeus gracilis, corpore haud sesquiongior: pedes flavo-ferruginei; tibiæ posticæ apice tarsique iidem fere toti fuscescentes: alæ hyalinæ, stigmate fusco, nervis pallidioribus, radice et squamulis pallide ferrugineis: posticarum areola brachialis-posterior vix $\frac{2}{3}$ anterioris longitudine.—Mas.—Antennæ corpore paulo longiores, 24—25-articulatae.

Habitat Hiberniam borealem, rariūs.

Sp. 17. H. E. pectoralis. *Niger nitidus, scutello et pectore rufis; stigmate pedibusque pallidis.* Fem. *Aculeo corporis longitudine.* (Long. corp. $2\frac{1}{4}$ —3; alar. $4\frac{1}{2}$ —6 lin.)

Eubadizon pectoralis . *N. ab Ess.* Monogr. 236. Sp. 4.

Fem. Antennæ corpore longiores, gracillimæ, 42—46-articulatae: oculi magni ovati: facies subquadrata; clypeus transversus: mandibulæ rufescentes; palpi pallidi: mandibulæ arcuatae

^f +Sp. 15. H. E. coxalis. Mas. “*Niger nitidus, pedibus luteis, coxis fuscis; abdominis 1^{mo}. segmento conico-angustato rimuloso; alis hyalinis.* (Long. corp. $1\frac{1}{2}$.)”

Eubazus pallipes mas? *N. ab Ess.* B. M. VI. 215.

Eubadizon coxalis . —— Monogr. 234. Sp. 1.

Habitat Germaniam. N. ab Ess.

acute bidentes : labrum tenuissimum, arcuatum medio sinuatum, epipharyngis trigonæ acuminatæ basin summam prætexens : maxillæ lobus membranaceus, integer ovatus : palpi maxillares valde elongati graciles ; articuli 1^{mus.} et 2^{dus.} breves ; 3^{tius.} linearicultratus ; reliqui lineares, 4^{tus.} longissimus, tum 5^{tus.} 6^{tus.} decrescentes : labium breve, lobi apice subretuso : palpi labiales 4-articulati ; articulus 1^{mus.} brevior obconicus ; 2^{dus.} dilatatus, oblique subtruncatus ; 3^{tius.} perexiguus ovatus ; 4^{tus.} elongatus, linearis basi attenuatus : thorax oblongus, utrinque attenuatus ; niger nitidus ; pectus, scutellum et suturæ pone hoc rubræ : sulculi impunctati ; metathorax lævis, fossula media punctulata : abdomen thorace longius et angustius, lineare, apice compressum ; segmentum 1^{num.} vix $\frac{1}{2}$ totius longitudine, lineare apice parum dilatatum, prope basin tuberculatum ; subtiliter rugulosum, aut læviuscum ; reliqua lævissima ; 2^{dum.} et 3^{num.} subtilius discreta, sequentia conjunctim longitudine æquant : aculeus corporis longitudine, valvulis depressis pubescens, nigris : pedes graciles, pallide flavi ; tibiae posticæ tarsique apice paulo obscuriores : alæ hyalinæ, stigmate, radice, squamulis stramineis, nervis plerisque fuscescentibus : stigma late obovata-lanceolatum ; areola radialis ovato-attenuata, apicem fere alæ attingens : posticarum areola brachialis-posterior anteriore parum brevior ; nervus tenuis axillaris prope radicem alæ.—*Mas.* Antennæ longiores ; abdominis segmenta posteriora longiora ; stylus analis compressus, obtusus, exertus.

Variat.—Thorace rubro, propectore et metathoracis dorso tantum nigricantibus : antennarum scapus et pedicellus rufi. — Obviæ sunt etiam varietates intermediae.

Habitat Germaniam, *N. ab Ess.*—Hiberniam, non infrequens.

Subgen. IV.—DIOSPILUS.^g

Palpi libiales 3-articulati : caput transversum crassum ; occiput marginatum : alarum anticarum areolæ cubitales tres.

**Bracon.* Sect. IV. Trib. 1. } *N. ab Ess. Act. Acad. IX. 303.*
Macrocephali }
————— *N. ab Ess. Mon. 60.*

Eubazus (partim) ————— *Act. Acad. IX.*
307?

Eubadizon. Sect. II. . . . ————— *Mon. 236?*

Adnot.—*Helcontum palpis labialibus 3-articulatis, areolis cubitalibus 3,* multæ species : mutantur et hæ forma ut e locis laudatis

^g *Diospilus*, a Διός, et σπίλος, propter stigma conspicuum.

patet: character nobis a binis derivatus, in universum itaque cautè propagandus.

<i>Conf.</i>	<i>Bracon</i>	<i>nobilis</i>	<i>N. ab Ess.</i>	<i>Mon.</i>	61.	16.
	—	<i>melanoscelus</i>	—	—	62.	17.
	—	<i>dispar.</i>	—	—	63.	19.
	—	—	<i>Berl. Mag.</i>	<i>V.</i>	12,	13.
	—	<i>filator</i>	—	<i>Mon.</i>	64.	20.
	—	<i>capito</i>	—	—	64.	21.
	—	<i>Ephippium</i>	—	—	65.	22.
	—	<i>dissimilis</i>	—	—	65.	23.
	—	<i>flavicornis</i>	—	—	66.	24.
	<i>Eub.</i>	<i>trigonus</i>	—	—	236.	5.

Magis dubii *videntur*,

<i>Bracon</i>	<i>analisi</i>	—	—	63.	18.
—	<i>gagates</i>	—	—	67.	25.
—	<i>ebeninus</i>	—	—	67.	26.

Sp. 18. H. D. oleraceus. Niger nitidus, pedibus rufis aut fuscis; alis hyalinis, areola subquadrata; abdominis ovati convexi segmento 1^{mo}. ruguloso. Fem. Aculeo corpore breviore. (Long. corp. 1—2½; alar. 2½—5½ lin.)

Statura *Triaspidis*: caput crassius, vertex latius planiusculus; occiput latum; genæ convexæ; oculi parvi rotundati; facies latissima planiuscula lœvis, supra clypeum profunde bifoveolata: mandibulæ sub clypeum arce forcipatae, apice bidentes: oris partes quales *Calypto* fere; palporum labialium articulus 3^{ius}. longior: antennæ *feminæ* corpore breviores, filiformes, sat validæ, pubescentes: mesothoracis sulculi fere impunctati; metathorax brevis rugulosus: abdomen thoracis longitudine, et eo vix angustius; ovatum, convexum, apice rotundatum: segmentum 1^{um}, paulo longius quam latius, basi attenuatum, rugulosum; reliqua lœvissima nitida, vix discreta: margines inflexi ventrem amplectuntur: aculeus e gibbo anali prodit, abdome sesqui-longior, valvulis crassis pubescentibus: pedes breves: alæ latæ; anticarum stigma latum trigonum; areola radialis ante alæ apicem clausa, late ovata vix acuminata; cubitalis 1^{ma}. nervum recurrentem excipit; 2^{da}. illâ parum minor, paulisper obliquata, nec plane rectangularis, nec æquilatera, at ferme latior quam longior; nervi axillari-recurrentis alterius vestigium ante apicem areolæ brachialis posterioris; ut in *H. lerido*, No. 1: alarum posticarum

areola radialis parum remota; brachialis-posterior $\frac{2}{3}$ anterioris longitudine. — *Mas.* Antennæ longiores: abdomen angustius, minus convexum.

Var. a.—(Long. 1— $1\frac{2}{3}$; alar. $2\frac{1}{4}$ — $3\frac{1}{2}$ lin.) Antennæ 22—27-articulatae, nigræ: mandibulæ ferrugineæ: palpi obscuriores: pedes rufo-ferruginei, coxis basi aut fere totis nigricantibus, tibiis posterioribus apice tarsisque fere totis fuscis: alæ hyalinæ, stigmate nigro-fusco, nervis fuscis, radice et squamulis ferrugineis. Exemplar femellum majus (Long. $2\frac{1}{2}$; alar. $5\frac{1}{2}$ lin.) communicavit amic. Curtis: huic pedes fere toti rufo-ferruginei: antennæ 29-articulatae, scapo subtus piceo.

Var. β.—Pedibus rufo-piceis; aut fuscis, tibiis basi pallidioribus: hi plerunque e minoribus.

Variat aculeo corporis longitudine.

Habitat Angliam, Hiberniam; in *Brassica Rapa*, *Sinapide nigra*, etc. frequens.

Sp. H. D. speculator. Fem. *Niger*, ore, antennis basi pedibusque ferrugincis; alis obscure hyalinis, areola transversa, oblique attenuata; abdominis obovato-lanceolati segmento 1^{mo}. conico-angustato, ruguloso; aculeo fere corporis longitudine. (Long. corp. $1\frac{1}{2}$; alar. $3\frac{1}{2}$ lin.)

Antennæ graciliores quam præcedenti; mutilatae, (at si recte memini, corpore breviores, filiformes): facies confertim punctata: metathorax magis attenuatus, subtiliter reticulato-rugulosus: abdomen thorace vix longius; segmentum 1^{num}. longiusculum sensim attenuatum, prope basin tuberculatum, subtiliter reticulato-rugulosum, angulis apicis depressis laevigatis; reliqua laevissima; venter postice compressus gibbus, valvula parva obtusa prominula: aculeus gracilis corpore parum brevior: pedes graciliores q. pr.—*Niger*, subtiliter pubescens: antennæ basi late ochraceæ: os, clypeus pedesque ferruginei: pedes postici sordidiores, femorum margine supero prope apicem (apiceque tarsorum omnium,) fuscescente: alæ multo angustiores q. pr. subfumato-hyalinæ, stigmate nervisque fuscis, radice et squamulis ferrugineis: areola radialis oblonga, in alæ apicem fere recta excurrens; cubitalis 2^{da}. 1^{ma}. duplo minor, longitudine posticâ et latitudine apicis fere pari, sed antrorsum valde attenuata, quasi triangularis angulo antico subtruncato: nervuli illius adscititii nullum vestigium: posticarum areola brachialis-posterior $\frac{1}{2}$ anterioris parum longior.

Adnot.—*Bracon flavicornis N. ab Ess. Mon. 66. 24. proxime affinis* videtur.

Habitat in Hibernia-boreali semel lectus.

Subgen. V.—MACROCENTRUS.

Palpi labialis 4-articulati; caput valde oblatum; occiput immarginatum retusum; vertex transversè fastigiatus: abdomen lineare, segmentis anterioribus subæqualibus, 2^{do}. marginato: aculeus elongatus: pedes elongati, calcaribus conspicuis: alarum anticarum areolæ cubitales tres.

*Bracon Fam. I. B. a. Lineares. *N. ab Ess. Berl. Mag.* V. 13.

Rogas Sect. I. Lineares . . . *Act. Acad.* IX. 306.

Macrocentrus *Curtis. Ent. Mag.* I. 187.

Gen. DXLVI.

Caput thoracis latitudine, valde oblatum; occiput superne retusum, immarginatum; vertex transverse compressus, in lineam contractus; ocelli elevati; frons inermis, abrupte declivis; oculi ovati; facies lata planiuscula; clypeus transversus, linea impressa utrinque foveolata sejunctus: mandibulæ arcuatæ, acute bidentes: labrum linearis-transversum, epipharyngis ligula apicali attenuata prostante: maxillæ lobus obtusus, membranaceus aut firmioris substantiæ: palpi maxillares modo elongati, et tum ratio articulorum fere qualis Helcontii; modo (in *H. infirme*,) breviusculi, articulis 1^{mo}. et 2^{do}. ratione reliquorum minus abbreviatis, 3^{ti}. obovato, exterioribus breviusculis: labii lobus integer obtusus: palpi labiales 4-articulati; articulus 1^{mus.} et 2^{dus.} subæquales, ille obconicus hic dilatatus obovatus; 3^{tus.} 2^{do}. longior, aut vix longior; 4^{tus.} longior linearis; (in *H. infirme* vero articuli longitudine subæquales, 3^{tus.} et 4^{tus.} obovati:) antennæ basi distantes, corpore plerunque longiores in utroque sexu, graciles setaceæ, 30—50-articulatæ: thorax oblongus sub-compressus; mesothoracis lobi tuberosi; metathorax brevis subtruncatus: abdomen thorace longius et angustius, lineare, apice compressum, dorso planum: segmenta discreta 8; 1^{num.} longiusculum, basi tuberculatum; 2^{dum.} et 3^{tum.} parum breviora, illius latera sulco discreta; reliqua breviora, transversa: venter carinatus, anus truncatus: valvula segmenti 6^{ti.} producta, compressa, obtusa, libera: aculeus linearis, corpore plerunque longior, rarius longitudine abdominis: pedes elongati; postici haud in-crassati; calcaria plerunque magna: alarum anticarum stigma late ovatum aut ovato-lanceolatum; areola radialis prope apicem alæ clausa, oblongo-ovata, latior quam Subgeneribus VI^{to}. et VII^{mo}. cubitalis 1^{ma.} sub medio nervum recurrentem excipiens;

^{2^{da}. minor oblonga, angulo posteriore baseos attenuato: posticarum radialis vix remota; brachialis posterior $\frac{1}{2}$ anterioris longior; nervus parvulus axillari-recurrens prope basin.}

Adnot.—*Lissonota* (Pimplarum Subgenus) non valde dissimilis.

Sp. 19. H. M. linearis. Fem. *Abdominis linearis segmentis 3 anterioribus rimulosis; antennis et aculeo corpore longioribus; capite, antennis basi, prothorace, ventre pedibusque flavo-testaceis, macula verticis fusca; reliqui corporis colore mutabili.* (Long. corp. $2\frac{1}{2}$; alar. $4\frac{1}{2}$ lin. aut minor.)

**Bracon linearis* . *N. ab Ess. B. M. V. 13. Sp. 15. tab. I. fig. 1.*

Rogas linearis . — Monogr. 200. Sp. 1.

Statura elongata linearis: antennæ corpore multo longiores, gracillimæ, circiter 45-articulatæ: palpi graciles; labialium articuli exteriores elongati lineares: metathorax confertim punctulatus: abdomen lineare, haud falcatum; segmentis 1^{mo}. 2^{do}. 3^{to}. concinne striatis, 2^{do}. distinete marginato: pedes elongati graciles: alarum stigma late ovatum; areola cubitalis 2^{da}. apice parum attenuata.

Var. a.—Piceo-niger: caput flavotestaceum, vertice medio nigricante: antennæ fuscae, scapo et pedicello pallidis: prothorax, pedesque toti pallide flavotestacci, coxae et trochanteres dilutiores: venter testaceus, basi pallidior: alae hyalinæ, stigmate flavo litura fuscescente, nervis fuscis, radice et squamulis stramineis.

Variat mox, pleuris antice et dorso mesothoracis obscure testaceis, hoc fusco-maculato.

Var. γ.—Testaceus, prothorace, ventre pedibusque pallidioribus; stemmatico, metathoracis punctis pone scutellum abdominisque dorso antice fuscescentibus; vel abdominis dorso toto fusco, segmentis intermediis margine omni testaceo: antennarum articuli plures pallidi: stigma obsoletiū maculatum.

Var. δ.—“Corpore toto concolore” (flavotestaceo). *N. ab Ess. l. l.*

Habitat Germaniam. *N. ab Ess.*—Angliam; Hiberniam.

^h †Sp. 20. H. M. pallipes. Fem. *Niger pubescens, palpis, antennarum articulo 1^{mo}. coxis et trochanteribus dilute flavis; ventre basi et pedibus luteis; abdominis linearis segmentis 3 anterioribus rugulosis; aculeo corpore longiore.* (Long. corp. 2 lin.)

**Bracon pallipes*. *N. ab Ess. B. M. V. 14. Sp. 16.*

Rogas pallipes . — Monogr. 203. Sp. 4.

“ Antennæ corpore longiores, 1^{mo}. articulo crasso: abdomen lineari-elongatum, NO. II. VOL. III. T apice

Sp. 21. H. M. thoracicus. Fem. *Niger, thorace rufo, pedibus flavotestaceis, abdominis linearis-subfalcatis segmento 2^{do}. striolato; aculeo corpore longiore.* (Long. corp. 3 lin. aut major.)

*Bracon thoracicus . *N. ab Ess. B. M.* V. 14. Sp. 18.

Rogas thoracicus . — Monogr. 205. Sp. 9.

Macrocentrus bicolor. *Curt. Ent. Mag.* I. 188.

Statura fere sequentis modo gracilior: caput nigrum, clypeo et ore rufis, palpis flavotestaceis: antennae corpore longiores, 49-articulatae, nigrae subtus piceae: thorax totus rufus: metathorax punctatus: abdomen quam illi longius et gracilius; nigrum; segmentum 1^{num}. obsoletius acculatum, 2^{dum}. confertim striatum, marginatum, 3^{rum}. basi striatum: pedes flavotestacei, unguibus, posticorum tibiis apice et unguiculari fuscis: alae obscure hyalinæ, nervis fuscis, stigmate flavotestaceo: stigma et areole ut in sequente.

Habitat Germaniam, N. ab Ess.—Angliam, J. Curtis.

Sp. 22. H. M. marginator. *Niger nitidus, pedibus rufis, tibiis tarsisque posticis nigris.* Fem. *Abdomine linearis-subfalcato; aculeo corpore sesqui-longiore.* (Long. corp. 3 lin.; alar. 6 lin.)

*Bracon marginator . *N. ab Ess. Berl. Mag.* V. 14. Sp. 18.

Rogas marginator . — Monogr. 205. Sp. 9?

— nidulator . . — 204. Sp. 7.

Fem.—Antennae corpore longiores, circiter 45-articulatae: palpi elongati pilosi picei: thorax vage punctulatus, scutellum conformatum: metathorax crasse punctatus: abdomen solito brevius et latius; segmentum 1^{num}, 2^{dum}. apice demto, 3^{rum}. basi summa subtilissime aciculata, 2^{dum}. distincte marginatum: pedes rufi; trochanteres superi, coxae anteriores, posticarum apex nigri; tibiae tarsique postici nigro-fusci: alae fumato-hyalinæ, stigmate fusco litura dilutiore, nervis fuscis, radice ferruginea, squamulis nigris: stigma late ovato-lanceolatum, angustius quam Sp. 19^{ma}: areola cubitalis 2^{da}. longior, apice non attenuata.

apice subcompressum, segmentis 3 anterioribus majoribus, rugulosis, 3^{ta}. lateribus rufescente: terebra ferruginea valvulis nigris: alae hyalinæ, nervis stigmateque pallide fuscis."

Adnot. ab H. linearis. Var. a.—Videtur hic non multum discrepans.

"Var. ventre basi concolore."

Habitat Germaniam, N. ab Ess.

Variat *Mas* coxis omnibus nigris: antennæ longiores quam *feminæ*: abdomen antice angustius.

Adnot.—*N. ab Ess.* in Monographia disjunxit, *R. marginatorem* segmento 2^{do}. striolato; coxis et trochanteribus rufis; palpis testaceis; abdomine longiore.—*R. nidulatorem* segmento 2^{do}. lœvissimo; palpis piceis; coxis et trochanteribus anticis totis, posterioribus apice plus minusve nigris.—Exemplaria nostra, abdominis sculpturâ cum illo; quoad palporum pedumque colores cum hoc, ferme convenient.

Habitat Germaniam, *N. ab Ess.*—Angliam; Hiberniam; Ebudes Insulas. Circa aggeres arenosos Hymenopterorum cuniculis perforatos deprehendi pluries *feminam* volitantem et considentem.

Sp. 23. H. M. infirmus. *Niger*, *palpis pedibusque pallide testaceis*. Fem. *Antennis brevibus basi pallide testaceis*; *aculeo corpore longiore*.

Rogas infirmus . *N. ab Ess.* Mon. 203. Sp. 5.

Fem.—Caput subdepressum, unde facies brevis latissima transversa: mandibulæ testaceæ: palpi pallidiores, breviuseculi: antennæ corpore breviores, sat validæ, 30—33-articulatæ; fuscae, basi-late pallide testaceæ, scapo fusco: thoracis lobi minus tuberosi, sulci punctulati; metathorax punctato-granulatus: abdomen lineare; segmentum 1^{mum}. oblongum, basi haud angustatum obsolete canaliculatum tuberculis obtusis; 2^{di}. latera basi marginata, ambo cum basi 3^{ti}. subtiliter aciculata: venter basi pallens: pedes pallide testacei, rarius immaculati; utplurimum femora postica apice, mox etiam tarsi obscuriores: pedes quam cæteris multo breviores, femoribus subclavatis: alæ obscure hyalinæ, stigmate fusco basi pallido, nervis fuscis, radice et squamulis obscure stramineis.

Variat mox, coxis saltem posticis basi fuscis, antennarum basi palpisque obscurioribus, aut piceis.—*Variat* etiam staturâ pedum et antennarum graciliore.

Mas.—*Feminæ* genuinæ conformis et concolor, modo antennæ longiores, totæ nigræ.—Illi vero sæpius abdominis segmenta anteriora lœviuscula, 1^{mum}. basi attenuatum, tuberculis angulatis: pedes plerunque sordide ferruginei, coxis et apice femorum omnium latius piceis: præterea antennæ pedesque sensim graciliores et longiores evadunt; quasi intermedius inter hanc et sequentem speciem, sed alæ hujus.

Habitat in pratis Hiberniæ passim minus frequens.

Sp. 24. H. M. picipes. Mas. *Niger, pedibus fuscopiceis; abdomine linearisubclavato; areola cubitali 2^{da}. antrorsum oblique attenuata.* (Long. corp. 2; alar. 3½ lin.)

H. infirmi maribus gracilioribus primo aspectu simillimus: statura gracilior: antennæ 35-articulatæ, corpore paulo longiores: metathorax punctulatus: abdomen piceum; segmentum 1^{mum}. nigrum, læviuscum, antrorsum attenuatum, tuberculis prominulis; 2^{dum}, læviuscum, basi marginatum; reliqua lævissima: pedes elongati gracillimi, fere ut in *H. linearis*, sed tarsi postici longiores: alæ albido-hyalinæ, stigmate fusco basi albido, nervis radice squamulisque fuscis: areola secunda cubitalis antrorsum oblique attenuata, latitudine apicis longitudinem anteriorem superante: hic itaque sequenti magis affinis videtur.

Habitat Hiberniam; in arenis maritimis semel lectus.

Sp. 25. H. M. collaris. Fem. *Niger, facie, ore, thorace antico pedibusque totis rufo-testaceis; abdomine linearisubclavato; aculeo fere abdominis longitudine.* (Long. corp. 1¾; alar. 3 lin.)

**Bracon collaris* . *Spinola, Ins. Lig.* II. 140.

Rogas collaris . *N. ab Ess. Monogr.* 204. Sp. 8.

Fem.—Caput piceum, clypeo et ore testaceis: antennæ corporis longitudine, 31 - articulatæ, nigrae: thorax piceus, prothorace, dorso mesothoracis et pleuris antice testaceis: metathorax punctulatus: abdomen basi sensim attenuatum, piceum; segmento 1^{mo}. et 2^{do}. basi marginato, læviusculis; reliquis lævissimis: pedes flavotestacei: alæ hyalinæ, stigmate flavotestaceo litura fuscescente, nervis pallide fuscis: areolæ fere ut in *H. picipede*.

Adnot.—Secundum Descript. l. l. facies quoque testacea esset, et thorax antice potius ruber: etiam nigra sunt, quæ in exemplari nostro picea: hoc itaque immaturum videtur.

Habitat “ Italianam; Germaniam.”—Hiberniam; semel lectus.

Subgen. VI.—ZELE.

Palpi labiales 4-articulati, articulo 3^{to}. minutissimo: caput oblatum; occiput marginatum; vertex transversus rotundatus: antennæ elongatae: abdomen subclavatum, falcatum; segmento 1^{mo}. longissimo: aculeus brevis: pedes elongati, calcaribus conspicuis: alarum anticarum areolas cubitales tres.

Zele (partim) *Curt. Br. Ent.* 415. fig. 1—6.

Zele *A. H. H. Ent. Mag.* I. 262.

Rogas. Sectio I. Lineares (partim). *N. ab Ess. Mon.* 200.

Caput transversum, thoracis latitudine; occiput marginatum, parum concavum; vertex transversus, subrotundatus; frons inermis: ocelli magni, ovati, tuberosi, contigui: oculi magni ovati, protuberantes: facies planiuscula, subquadrata, clypeus semicircularis, linea transversâ impressâ, utrinque profunde foveolata sejunctus: mandibulæ arcuatæ, acute bidentes: labrum conspicuum, fere semicirculare, dense ciliatum, epipharyngis ligula tenuissima prostante: palpi maxillares valde elongati; articuli 1^{mus.} 2^{dus.} brevissimi; 3^{tius.} dilatatus cultratus; reliqui lineares, 4^{tus.} longissimus, 5^{tus.} 6^{tus.} decrescentes: palpi labiales 4-articulati; articuli 1^{mus.} et 2^{dus.} longitudine subæquales, ille obconicus, hic valde dilatatus, oblique truncatus; 3^{tius.} minutus obovatus; 4^{tus.} longissimus linearis subarcuatus, basi constrictus: antennæ setaceæ, corpore longiores, circiter 50-articulatæ: thorax oblongus compressus; sulci ordinarii ante scutellum concurrentes; metathorax brevis, subtruncatus: abdomen thorace longius, linearis-clavatum, postice compressum præsertim in *femina*, falcatum, ano truncato: segmenta dorsi 8 conspicua; 1^{num.} elongatum lineare, ipsa radice incrassatum et tuberculatum; reliqua decrescentia; 2^{di.} lateribus parum depresso, nec distincte marginatis; posteriora transversa: forceps maris compressus obtusus subexertus: *feminae* aculeus brevis: pedes elongati; postici vix crassiores; calcaria magna: alarum anticarum stigma lanceolatum; areola radialis oblongo-lanceolata, subsinuata, alæ apicem attingens: areola cubitalis 1^{ma.} nervum recurrentem sub medio excipiens; 2^{da.} minor, oblonga, angulo posteriore baseos attenuato: posticarum brachialis posterior $\frac{1}{2}$ anterioris longior, dilatata; nervo axillari parvo prope basin alæ.

Adnot.—De relatione hujus ad *Perilitos* jam dictum est: inter Ichneumonidas Genuinos *Panisci* species non valde aliena.

Sp. 26. H. L. testaceator. *Testaceus tarsis posticis albidis*; alarum posticarum areola radiali coarctata. Fem. Aculeo $\frac{1}{2}$ abdominis longitudine. (Long. corp. 4—5; alar. 9—10½ lin.)

* Zele testaceator . . *Curt. Br. Ent.* 415. Sp. 3.
Mas. Rogas annulicornis . *N. ab Ess.* Mon. 201. Sp. 2.

Fem. — Testaceus; palpi pallidiores; mandibulae apice fuscae; stemmaticum nigricans; ocelli crystallini; oculi obscure virides; antennae apice fuscantes: punctum ordinarium nigrum supra radicem alarum: metathorax haud distincte areatus, obsolete punctulatus: abdomen basi pari modo punctulatum; segmentum 1^{um}. antice laevigatum et medio longitudinaliter elevatum: aculeus segmenti 1^{mi}. longitudine: pedes testacei, unguis fuscus; tarsi postici fere toti pallescentes: alae fumato-hyalinae, lineola interrupta obscure hyalina sub stigmate, areolam cubitalem 2^{dam}. percurrente; nervi fuscus, costa in *femina* magis lutescens; stigma, radix, squamulae luteo-testaceae: alarum posticarum area radialis cum brachiali angulatim contigua, ante medium coarctata ob sinum nervi cubitalis.—*Mas.* Antennae validiores, latius infuscatae: abdominis dorsum plerunque fuscans.

Habitat Germaniam, *N. ab Ess.* — Angliam, Hiberniam; non infrequens.

Sp. 27. H. Z. chlorophthalmus. Rufotestaceus; alarum posticarum areolis radialibus duabus. Fem. Aculeo subexerto. (Long. corp. 3 $\frac{1}{2}$; alar. 9 lin.)

Rogas chlorophthalmus . N. ab Ess. Monogr. 202. Sp. 3. (demto synom.)

Fem. — Præcedenti similis: statura tota gracilior: abdomen brevius, clavatum, minus compressum; aculeo ascende, vix apicem abdominis superante: pedes graciliores: tarsi omnes concolores: alae ampliores; anticarum stigma et areola radialis latiores; posticarum area radialis a brachiali remota, et in 2 areolas partita.

“*Mas.*—*Feminæ simillimus, etc.*” *N. ab Ess.*

Habitat Italiam; Germaniam, *N. ab Ess.* — Scotiam; mihi semel lectus.ⁱ

ⁱ Subgen. VII.—HELCON.

*Palpi labiales 4-articulati: caput transverso-quadratum; occiput marginatum; vertex planiusculus; frons inæqualis mucronata: antennæ apice revolutæ in *femina*: thorax elongatus, antice compressus; mesothoracis scutum trilobum, tuberosum: abdomen oblongo-lanceolatum, segmento 1^{mo}. longiusculo: aculeus elongatus: pedes postici elongati incrassati, femoribus clavatis, calcaribus inconspicuis: alarum anticarum areolæ cubitales tres.*

**Helcon. N. ab Ess.* *Berl. Mag.* VI. 216. Gen. VIII.

— — — — *Act. Acad.* IX. 307. Gen. III.

— — — — *Monogr.* 224. Gen. III.

Subgen. IX.—ORGILUS.^k

Palpi labiales 4-articulati, articulo 3^{to}. minutissimo : caput posice excavatum ; occiput immarginatum ; facies convexa : abdomen oblongo-lanceolatum, segmentis anteriori-

^k *Orgilus, Oργίλος, iracundus.*

Caput crassum ; occiput parum concavum, marginatum ; vertex amplius, planiusculus ; frons utrinque elevata subcarinata, medio retusa, acumine inter antennas armata : oculi parvuli, protuberantes ; facies tumida, variolosa ; clypeus brevis, indistinctus, margine recto ; genas margine infero compresso os utrinque muniunt : labrum, rectum, obtuse trigonum, dense ciliatum : mandibulae breves, validae, vix curvatæ, apice bidentes : maxillae lobus membranaceus, obtusus : palpi maxillares elongati pilosi ; “articulus 1^{mns.} brevissimus,” 2^{dus.} brevis obconicus ; 3^{tas.} dilatatus cultratus ; reliqui lineares ; 4^{tas.} longissimus, 5^{tas.}, 6^{tas.} decrescentes : labii lobus apice subemarginatus : palpi labiales pilosi, 4-articulati ; “articulus 1^{mns.} brevis obconicus ;” 2^{dus.} valde dilatatus, oblique subtruncatus ; 3^{tas.} illo vix brevior, obovatus ; 4^{tas.} valde elongatus, linearis.—Antennæ corporis longitudine, sat valida setacea, apice revolutæ, 43-articulatae in *H. angustatore* ♀.—Thorax elongatus, cylindricus, antrorsum compressus ; prothorax productus gibbus, variolosus, margine elevatus ; mesothoracis lobi valde convexi, intermedius versus caput protrusus ; metathorax crassus, apice truncatus, reticulato-rugosus et lineis longitudinalibus carinatis 4 s 6 partitus : abdomen thorace angustius et parum longius, lineare, dorso planum ; apice compressum, subfalcatum : segmentum 1^{mum.} lineare vel antrorsum parum attenuatum, basi tuberculatum, plerunque bicarinatum ; 2^{dum.} et 3^{dum.} illo parum breviora ; tum reliqua brevia, transversa : anus truncatus, valvula ventrali obtusa, libera, porrecta : aculeus linearis elongatus : pedes longi ; antici valde remoti ; tarsi elongati : pedes postici longissimi, coxis magnis, femoribus incrassatis sœpe dentatis, tibiis tarsisque crassiusculis, calcaribus minutissimis : alæ minores quam affinis ; anticarum stigma lanceolatum ; areola radialis oblongo lanceolata, apicem alæ non attingens ; cubitalis 1^{ma.} nervum recurrentem sub medio excipiens ; 2^{da.} parva, vix longior quam latior, sed angulo posteriore baseos producto, attenuato ; brachiales fere conterminæ, ex apice posterioris in marginem posticum rectâ transcurrit nervus spurius, qualem in nullo alio deprehendi (anon nervus axillari-recurrens alter insolito situ?) : posticarum areola radialis contigua ; brachialis-anterior lata ; posterior illâ paulo brevior, apice dilatata, nervo axillari distincto prope basin alæ.

Adnot.—Character nobis desumptus ab *H. angustatore* : consulenda est universius Generis descriptio a clmº. : Neesio l. l. diligenter elaborata.

“Metamorphosin in larvis Coleopterorum xylophagorum subire verosimile est. Feminae in truncis cassis putridisque plerunque inveniuntur, obambulantes, et terebra sua aditus ad larvarum habitacula pertractantes.” *N. ab Ess.*

Adnot.—Generis *Acænitis* inter Ichneumonidas *Genuinos* analogia aperta.

†Sp. 28. *H. carinator.* “Niger, ore pedibusque totis rufis, tibiis tarsisque posticis nigris ; abdomine lineari-oblongo, 1^{mo.} et 2^{do.} segmento subæqualibus, punctulato-rugosis, illo basi retuso, acute bicarinato ; femoribus posticis inermibus. Fem. aculeo longitudine corporis. (Long. 4—5 lin.)”

bus subæqualibus : aculeus elongatus : pedes postici validi, femoribus compressis, calcaribus magnis : alarum antica- rum areolæ cubitales duæ ; radialis angusta cuneata.

**Helcon carinator.* *N. ab Ess. Berl. Mag.* VI. 218. Sp. 1.
————— *Monogr.* 227. Sp. 1.

Habitat Germaniam.

†*Sp. 29. H. tardator.* “*Ater, nitidus, pedibus totis rufis, tibiis tarsisque posticis nigris ; abdomine linearis, segmento 1^{mo}. rugoso bicarinato 2^{do}. longiore ; femoribus posticis inermibus. Fem. Aculeo corpore breviore.* (Long. 5½—6 lin.)”

**Helcon tardator.* *N. ab Ess. B. M.* VI. 218. Sp. 2. tab. IV. fig. 6.
————— *Monogr.* 228. Sp. 2.

Habitat Germaniam.

Sp. 30. H. angustator. “*Ater, nitidus, abdomine linearis, basin versus angustato ; segmento 1^{mo}. convexiusculo, punctato-ruguloso, obsolete canaliculato ; pedibus totis rufostaceis, tibiis tarsisque posticis nigro-fuscis ; femoribus posticis inermibus.* (Long. 3½—5 lin.)”

**Helcon angustator.* *N. ab Ess. B. M.* VI. 219. Sp. 3.
————— *Monogr.* 228. Sp. 2.

Variat, aculeo modo abdominis longitudine, modo corporis, aut intermediâ.

Habitat Italianam ; Germaniam, *N. ab Ess.*—*Galliam, J. Curtis.*

Sp. 31. H. dentator. Fem. “*Ater, nitidus, abdomine linearis-subclavato, basin versus angustato ; segmento 1^{mo}. subconico, convexiusculo, punctulato, obsolete canaliculato ; pedibus totis rufostaceis, tibiis tarsisque posticis nigro-fuscis, femoribus posticis unidentatis ; aculeo corpore longiore.* (Long. 5¾ lin.)”

**Pimpla dentator.* *Fabr. Syst. Piez.* 114. Sp. 7.
Helcon æquator. *N. ab Ess. B. M.* VI. 219. Sp. 4.
————— *Monogr.* 229. Sp. 4.

Habitat Italianam ; Germaniam.

†*Sp. 32. H. ruspator.* Fem. “*Ater, nitidus ; abdomine subclavato, 1^{mo}. seg- mento conico-angustato, rugoso, bicarinato ; pedibus rufis, coxis nigris, femoribus posticis clavatis, valide unidentatis ; aculeo corporis longitudine.* (Long. 4½ lin.)”

**Ichneumon ruspator.* *Linn. Fna. Suec.* 1625.
Cryptus ruspator . *Fabr. Syst. Piez.* 88. Sp. 77.
Ichneumon, etc. . *Geoffr. II.* 326. Sp. 12.
Helcon dentator . *N. ab Ess. Berl. Mag.* VI. 220. Sp. 5.
Helcon ruspator. . *Monogr.* 230. Sp. 5.

Habitat Germaniam, Galliam, Sueciam. Auct. laud.

†*Sp. 33. H. annulicornis.* “*Fem. Ater nitidissimus ; abdominis sublinearis 1^{mo}. segmento acute bicarinato ; pedibus rufis, coxis trochanteribusque anterioribus tibiis tarsisque posticis nigris, his medio et antennarum annulo albis ; femoribus posticis unidentatis.* (Long. circiter 5¾ lin.)”

Helcon annulicornis. *N. ab Ess. Monogr.* 231. Sp. 6.

Habitat Germaniam.

- **Microdus*. Fam. I. *N. ab Ess. Berl. Mag.* VI. 185.
Microdus. Sect. II. ————— *Act. Acad.* IX. 304.
————— ————— *Monogr.* 149.

Adnot.—Forma capitis et abdominis non dissimilis equidem *Microdus*; sed alae trophique conjunctionem sanè dirimunt: præterea a *Macrocentris* non discrepant multum charactere universo.

Sp. 35. H. O. *obscurator*. (Long. $1\frac{1}{2}$ — $2\frac{1}{4}$; alar. $2\frac{1}{2}$ — $3\frac{1}{2}$ lin.)

- **Microdus obscurator*. *N. ab Ess. B. M.* VI. 186. Sp. 3.
tab. IV. fig. 1.
————— . *N. ab Ess. Monogr.* 151. Sp. 14.
————— *lævigator* . ————— *B. M.* VI. 185. Sp. 2.
-

Subgen. VIII.—CARDIOCHILES.

Palpi labiales 4-articulati: oris partes parum elongatae; labii lobus bifidus: caput oblatum; occiput marginatum; clypei margo bilobatus: anteculae breves porrectæ: abdomen thoracis longitudine, oblongum; (segmento 2^{do}. brevissimo, bistrato?) valvula ventralis aculum exsertum fulcens: pedes postici elongati validi, femoribus tibiisque compressis: alarum anticarum areolæ cubitales tres.

- **Cardiochiles*. *N. ab Ess. Act. Acad.* IX. 307. Gen. II.
————— *Monogr.* 221. Gen. II.

Adnot.—Characteres Genericos fuse expositos videoas loco laudato, unde haec paucula excerpti de insecto mihi inviso: credo sulcum illum cuius memorat Cl. Auctor in segmento 2^{do}., revera designare fines 2^{di}. et 3^{ti}.; quum ipse tantum septem segmentorum mentionem fecerit; illa vero inter *Helconites* modo discreta, modo coalita extent: jam *Microgastris* forma erit plane analoga.

†Sp. 34. H. C. *saltator*. (Long. $2\frac{1}{2}$ lin.)

Cardiochiles saltator. *N. ab Ess. Monogr.* 224. Sp. 1. (exclus. Synonym.)

Fem.—“Ater, nitidissimus, pubescens: mandibulæ piceæ: mesothoracis scutum, totum vel apice tantum, scutellumque, femora antica apice, tibiæ eadem et tarsi toti late rufi: abdomen lævissimum: aculeus longitudine circiter $\frac{1}{3}$ abdominis: alæ obscure hyalinæ, apice late fuscæ, nervis et stigmate nigro-fuscis.”

Add.—“Antennæ dimidio corpore longiores, pubescentes: metathorax punctato-rugosus areatus: abdominis segmentum 2^{dum}. subquadratum, sulco transverso basi propiori divisum, campo antico-lincolis 2 impressis antrorum conniventibus tripartito.”

“*Mas.*—Scutello nigro.”

“*Var. B.*—*Mas.* thorace nigro, solo apice lobi medii mesothoracis rufo.”

Habitat Italianam.

- Microdus levigator* . *N. ab Ess.* Monogr. 150. Sp. 13.
 ————— annulator . ————— *Berl. Mag.* VI. 186. Sp. 4.
 ————— ————— *Monogr.* 152. Sp. 15.

Caput vix thoracis latitudine ; occiput excavatum, haud distincte marginatum ; vertex transversus, rotundatus ; facies medio convexa, subcarinata, supra clypeum profunde bifovealata : mandibulae breves, apice bidentes : labrum lineari-transversum, lateribus rotundatum, epipharyngis ligula apicali attenuata prostante: maxillae lobus obtusus, membranâ firmiore : palpi maxillares breviusculi ; articulus 1^{mus.} brevissimus obconicus ; 2^{dus.} paulo longior et crassior ; 3^{tus.} illis coniunctim vix brevior, crassior, cultratus ; 4^{tus.} paulo longior ; 5^{tus.} et 6^{tus.} breviores, fere lineares : labii lobus integer obtusus : palpi labiales 4-articulati ; articulus 1^{mus.} obconicus ; 2^{dus.} illius longitudine, crassior, obovatus ; 3^{tus.} minutissimus, ovatus ; 4^{tus.} reliquis paulo longior, lineari clavatus : antennæ validæ, teretes, circiter 30-articulatae ; in *femina* corporis longitudine, apice recurvæ ; in *mare* longiores : thorax oblongus, subcompressus ; mesothoracis sulculi parum profundi ; metathorax apice subtruncatus, denticulo parvo utrinque prope foramen petioli : abdomen oblongum, apice compressum, thorace longius et angustius ; segmentum 1^{mum.} oblongum, antice parum attenuatum, denticulo lateralí prope basin ; 2^{dum.} illi fere æquale, reliqua decrescentia in octavum minutissimum : venter compresso - carinatus ano oblique truncato, rimâ segmenti ultimi antrorum descendente : valvula ventralis obtusa compressa, haud anum attingens : pedes longinsculi ; postici validiores, femoribus tibiisque compressis ; calcaria valida, postica ½ metatarsi longitudine : alæ angustæ ; antearum stigma lanceolatum ; areola radialis angusta cuneiformis, longe ante apicem alæ clausa ; cubitales duæ, nervus illas sejungens valde obliquus, in nervum cubitalem extrorsum fere recta continuatus ; nervus recurrens areolæ 1^{mu.} sub medio insertus : posticarum areola radialis vix remota ; brachialis-posterior dimidio anterioris parum longior.

Niger, capite thoraceque subobscurus, pubescentibus : mandibulae piceæ aut rufæ ; palpi nigri : metathorax punctulatus, vel granulatus : abdominis segmentum 1^{mum.} subtilius crebre punctulatum, basi obsolete canaliculatum ; 2^{dum.} pariter punctulatum, margine plerunque lœvi ; reliqua lœvissima nitida ; nonnunquam segmenta anteriora fere lœvigata sunt : aculei longitudo modo corpus æquaus, modo abdomen parum superans : alæ modo fumato-hyalinæ, modo fuliginosæ, lineolâ hyalina Y-formi sub stigmate plus minusve distinctâ, stigmate nervisque fuscis : pedum colores variant ; modo,

- α. pedes nigri; femora antica apice, tibiæ eadem fere totæ, rufescentes; tibiæ posteriores basi fusco-piceæ; calcaria rufo pallida; modo,
- β. coxæ et trochanteres nigri, apice rufi; femora anteriora rufa, margine supero et infero, anticorum versus basin tantum, nigricante; postica nigra margine infero late rufa; tibiæ rufæ, posticæ apice fuscae; calcaria rufa; tarsi fusi: his præterea antennæ basi piceo rufæ, scapo nigro: sed illæ diversitates tam coloris quam puncturæ sensim collabuntur.

Habitat Germaniam, *N. ab Ess.* — Angliam; Hiberniam; in litorebus præsertim arenosis non infrequens.

Adnot. — *Microdus punctulator*, *N. ab Ess. B. M. VI. 185. Sp. 1.* Monogr. 150. Sp. 12: discrepat, puncturæ totius abdominis multo densiore, segmentorum post secundum marginibus posticis tantum lævibus nitidis; aculeo $\frac{1}{2}$ abdominis longitudine: suspicabar esse meram varietatem sed talem non ipse vidi.

ART. XIV.—*Remarks on the Entomology of Epping and its Vicinity.* By EDWARD DOUBLEDAY.

“What is writ, is writ,
Would it were worthier.”

DEAR SIR, — The list of *Lepidoptera* captured in this neighbourhood, and some other parts of the enclosed paper, were drawn out many weeks ago, just at the time when the return of spring, whilst it made me think of preparing for a new campaign, recalled the memory of former adventures. As the sportsman, when the sultry days of August are almost passed, enjoys, by anticipation, the sports of the approaching September—thinks and tells of his excursions in years that are gone by; so in the spring the entomologist, whilst anxiously looking forward to the time when the first warm days call forth *Brephä notha*, *Echinomyia ursina*, and a profusion of bees and other insects, turns back to the events of other days, dwells with pleasure on the captures he has made; and then, recurring again to the prospects of the future, rejoices in the expectation of similar success, happy in the hope of increasing his own collections, but happier far in the prospect of being

able to augment those of his friends and fellow-labourers in science.

I was induced to attempt to give a sketch of our Entomology, (which I had intended to render far more perfect than the hasty outline I now send you,) by the hope of being able to contribute to the gratification of others, by making known what rare insects we capture here, and thereby enabling those lovers of science to whom these may be desiderata, to know in what quarter to apply for specimens, and to tell them that these will be cheerfully given, as they may occur, to all scientific collectors who do not possess them. The wish to make some remarks on the habits of particular species, an opportunity for which is afforded by such a paper, and the hope that I might be aiding, in some degree, our knowledge of Insect Geography, by adding to my list of species some notices on the climate, elevation, soil, and other local characters of this neighbourhood, were two other motives which led me to begin this paper. Had I at once proceeded to finish it, it might have been far more perfect than it now is; but when I had some little leisure to do well that which it was in my mind to do, and which I had promised you that I would do, I allowed my habitual dislike of writing to prevail over me, circumstances turned my attention to other fields for study, where,

“ Circumriguo surgebat lilia prato
Candida purpureis mista papaveribus;
Quæ modo decerpens tenero pueriliter ungui
Proposito florem prætuli officio.”

Or, in plain English, I spent that time in reading the chronicles of the deeds of Spaniards in the days of the first discovery and succeeding desolation of the land of my affections, which ought to have been employed on this paper. And now that, in order to fulfil my promise to you, I must prepare it for the press, unforeseen and uncontrollable events have snatched from me those few hours of daily leisure on which I could count, and the affairs of business just now occupy me so fully, that they sometimes barely allow me time for needful repose. I lament now my error, but,

“ Quid juvat errores mersa jam puppe fateri,
Quid lacrymæ delicta juvant commissa secutæ.”

My only course is, by extra exertion, to endeavour to make

this paper a little like what it ought to have been, and perhaps would have been, and then trust to your readers' goodness of heart to excuse the imperfections of my work.

I remain, yours, most truly,

EPPING,

May 21, 1835.

E. DOUBLEDAY.

The town of Epping (anciently Eppinges) is now situated on the road from London to Newmarket, about sixteen miles from town. I say it is *now* situated, because, in former days, it stood, I believe, two miles from its present location; and, as it has once migrated two miles, we may suppose, that should similar causes operate again, it may make another move.

According to a multitude of observations made by my uncle, Mr. T. Squire, well known as a mathematician and astronomer, the town stands in lat. $51^{\circ} 41' 42''$ north long. $6' 15''$ east, at an elevation of 389 feet above the level of the sea. The mean annual temperature is $50\frac{3}{4}^{\circ}$, the mean of January 36° , of February 39° , of March 43° , of April 49° , of May 56° , of June 61° , of July 64° , of August 64° , of September 60° , of October 51° , of November 46° , of December 39° . The mean annual fall of rain is 26.77 inches. The soil of the adjoining country is generally a stiff cold clay, occasionally becoming more or less gravelly. Its surface consists of gently undulating hills, whose summits rise about one hundred, or rather more, feet, above the intervening valleys—but this is more especially the case on the eastern side of the road to London—and it is almost solely to this part that my remarks in this paper will apply. The eastern half of a circle, whose radius is about four miles, and whose centre is situated about a quarter of a mile to the west of the town, includes the place in which nearly all the insects mentioned in this paper have been taken, with one or two exceptions, by my brother, Mr. H. Doubleday, and myself. As there are some parts of this limited district which I have not thoroughly examined, I have no doubt that further researches will enable me to add many more species, even to the list of *Lepidoptera*. Last season our own little garden afforded three species, which I had not before seen in this neighbourhood—*Miselia comptu*, *Hadena saponaria*, and *Agrotis radiola*.

The country in this semicircle is composed chiefly of pasture and wood-land, in about equal proportions—there is but little arable land; no river flows through it, and we have no large pieces of water. But let us examine it in detail, beginning at the south-western extremity:—There, at High-Beech, the ranges of little hills which compose most of this semicircle, terminate and give place to the valley in which stands the town of Waltham Abbey, whose monks, in former times, possessed all the land in this part, and in whose church lies, or is said to lie, all that remains of the last of our Saxon kings. The soil of High-Beech is sandy, but only for a small space. A portion of the forest here consists of tall trees, chiefly beeches and oaks, but nearly all that part of it which lies to the south and south-west of the town, is little more than an assemblage of pollard hornbeams, whose seeds are in winter a favourite food of the grosbeak, a bird by no means rare here. Intermixed with the hornbeams are a few pollard and some tall oaks, and many tall crab-trees, hollies, and white-thorns. In the two latter the grosbeak mostly builds. Gentle reader, were this the proper place, I could tell thee many a history of this and our other birds, although I am not professedly an ornithologist; but as Sancho says, “*Tal vez ay, que se busca una cosa, y se halla otra.*” And thus it has happened, that in my solitary walks after insects, I have often learned as much of birds as of them. But this is neither here nor there.

We have few flowers of which insects are fond, in this, or indeed in any part of our woods,—the *Umbelliferæ* in particular are almost entirely wanting. There are a few rather rare plants which occur here, as *Campanula hederacea*, *Polygonum multiflora*, *Hypericum elodes*, *Veronica montana*, &c. The Entomology of this part differs chiefly from that of the rest of our neighbourhood, in offering fewer both of species and individuals, but *Polyommatus Argus*, *Melitaea Selene*, and *Hipparchia Galathea*, are abundant here; whilst in the woods to the east of the town the first never occurs, the second is very rare, although *M. Euphydryas* abounds, and the third has nearly disappeared. I have also taken here *Brachinus crepitans*, *Cychrus rostratus*, *Carabus catenulatus*, *Berosus ariiceps*, *Panurgus ursinus*, *Acrocera globula*, and some other insects we do not take elsewhere within our district.

To the east and south-east of the town are the woods

belonging to M. C. Marsh, Esq. of Park-hall, to Sir J. Smyth, of Hill-hall, and the woods called Ongar Park-woods, the property of Capel Cure, Esq., of Blake-hall. Adjoining these woods is a small portion of forest, resembling the rest of our forest in the abundance of hornbeams, but having fewer beeches, and a good many birches. This has, as well as the other parts, many open boggy places, which of course have their peculiar insects. There are likewise a vast number of gravel-pits, especially old deserted ones ; these being mostly full of water are the resort of numerous aquatic insects, amongst which I may mention—*Pælobius Hermanni*, *Rantus pulverosus*, *R. notatus*, *R. exoletus*, *R. agiles*, *R. adspersus*, *Liopterus oblongus*, *Dytiscus circumflexus*, and many other of the *Dytiscites*, *Berosus luridus*, *globosus*, &c. About midsummer the rushes on their sides swarm with *Noctuites*, which come to suck the honey of their flowers. Amongst these I may mention—*Mythimna grisea*, *Caradrina ambigua*, *C. sepii*, *C. cubicularis*, *C. alsine*, *C. glareosa*, *Leucania comma*, *L. impura*, and *L. pallens*, *Bombycia viminalis*, and *Acosmetia lineola*. There also we take, *Anax formosa*, *Aeshna teretiuscula*, *Gomphus vulgatissimus*, *Cordulia ænea*, *Libellula 4-maculata* and *Agrion rubellum*—the three last in profusion. *Libellula prænubila* is also found in the adjoining fields.

I have recently been told that the last-named insect is merely the female of *L. 4-maculata*, and such I believe is now the opinion of some entomologists. For my part, I am far from being of this way of thinking. I am at a loss to discover how one *male* insect can be the female of another ; and we certainly do take males with all the markings of a true *prænubila*, although there is not one male to ten females. But let me state the case fully and fairly.

About the end of May,—when,

“ Los prados se visten flores
Aguiles, blancas y rojas
Los arboles verdes hojas
Las aves nueva colores,”—

we see flying along the hedges, or over the flowery fields, certain *Libellulae*, which bear a great resemblance in their flight to *L. depressa* ♀ ; in fact, at a distance, they might be

mistaken for that insect. They take wide circuits over the grass, or skim, sparrow-hawk like, along the hedges. On a more attentive examination, we find that they closely resemble in form *L. 4-maculata*, but are a far prettier insect, owing to the predominance of a sub-orange hue over their body and a large portion of their wings, the apex of which is mostly marked with a fuscescent patch, as is also the middle of the costa of the anterior wings; but these marks are not constant. A few days later there comes forth a host of *L. 4-maculata* over every pond and gravel-pit in this part. These never, or at least very rarely, leave their native ponds, but hover over them like a *Kestrel*, from morn till dewy eve, when they go to sleep somewhere or other, but where I know not, as I never could find them so much as dozing. From their dull colour, and being clothed with a long pallid pubescence, they appear as they fly almost grey, whereas *L. prænubila*, the pubescence of which is shorter and more fulvous, appears as I have said before, just like a *L. depressa* ♀. The females, which are very rare, are a little yellower than the males. The wings of these never have the fuscescent marks.

No stress can be laid on the disparity of sexes, because sometimes, if not always, the female of *Cordulia ænea* is extremely rare, equally so with that of *L. 4-maculata*. Last year I took above fifty *Cordulias*, without finding one female; neither could I detect one amongst the hundreds which swarmed over these pits.

The woods of which I was speaking prior to this digression, extend in length about three miles; their breadth varies very much, being broken in upon by pieces of cultivated ground, which almost break them into distinct patches of wood. They are crossed in various directions by foot-paths and broad rides cut in direct lines through them. Eight of these meeting at a fir-tree, on the top of a small hill, have given it the title of the centre tree. On either side of these woods are other small ones, the property of Sir J. Smyth and Mr. Marsh. These woods are chiefly oak, with some birches and aspens, beneath which is dense and almost impenetrable underwood, of oak, hornbeam, hazel, birch, aspen, and *Rhamnus frangula*, the whole intermixed with sallows, brambles, and honey-suckles. Beneath, in the spring, the ground is covered with primroses, wood-anemones, and the wild hyacinth, and the air is perfumed

with the delicious fragrance of the humble lily of the valley. But there are none of the umbelliferous plants, of which the *Ægeriites* and *Lepturites* are so fond. The underwood is cut in rotation when at about fifteen years growth, which of course affects the number of insects. But this is increased or diminished by causes which seem to defy all our attempts at discovering them. Species vanish from spots where they have abounded, and we know not why: no change perceptible to us has taken place in any of the peculiarities of the spot, but its old inhabitants are gone. The hand of man cannot have exterminated them, as it has the noblest tenants of our woods; their countless numbers are not to be destroyed by him as the *Accipitres* have been. Have they fallen a prey to the tribes of insectivorous birds which abound here? for this is truly,

“A populous solitude of bees and birds,
And fairy forms, and many coloured things.”

But they are not now more numerous than they formerly were. Perhaps they have fallen before foes more nearly of their own rank in creation,—enemies more of their own kind. It may be so; but we know too little of their history to be able to judge.

We can easily conceive that those insects which prefer the tall underwood will not remain when that is cleared, neither will those which prefer the newly-cleared parts remain after these have grown up. But spots congenial to their habits are always close by; yet we find insects which once abounded becoming gradually more rare, or suddenly disappearing altogether. Until within the last four or five years, *Rhynchites populi*, *Saperda populnea*, *Chrysomela rufipes*, *C. decem-punctata*, *Campylis dispar*, *Telephorus Alpinus*, *Pogonocerus nebulosus*, *Clythra 4-maculata*, *Melandria caraboides*, *Apo-derus Avellanae*, and *Attelabus curculionoides*, were all far from rare. The six first were abundant in almost all parts of these woods, especially the lovely *R. populi*, of which a hundred might have been collected in a few hours from the young aspen shoots; in fact, one stroke of my stick has brought eight or ten at once into my nets. But now this has totally vanished; and the five others are so rare, one, two, or three years may pass over without their occurring. The other species mentioned were never *very common*, but now they are rare, though

perhaps less so in a great degree than the other species which formerly abounded. Yet the woods,

“The coverts of old trees, with trunks all hoar,
And light leaves young as joy, stand where they stood.”

And they stand, as a whole, unaltered; for though portions are every year doomed to the axe, yet others are constantly growing up, and the woods have undergone these partial changes, perhaps, for centuries. Thus much as to the locality. I must now proceed to give a slight outline of our Entomology,—very slight truly in all classes, save *Lepidoptera*,—but my time is too short to do more.

In the Geodephagous *Coleoptera*, we have little to boast of; in fact, with the exception of *Dromius sigma*, which Mr. Waterhouse took here last winter, and *Anisodactylus paciloides*, I cannot mention one rare species. The following genera have not occurred here to my knowledge; some of them, of course, could not be expected to occur; but I mention all undoubtedly British genera, to avoid ambiguity.

Drypta	Trimorphus	Cheporus
Odacantha	Licinus	Oodes
Lebia	Epomis	Zabrus
Lamprias	Rembus	Pangus
Polistichus	Callistus	Actephilus
Tarus	Odontonyx	Stenolophus
Scarites	Platyderus	Masoreus
Dyschirius	Pogonus	Eaphilius
Calosoma	Sogines	Aëpus
Pelophila	Misoclera	Lymnaeum
Nebria	Brosicus	Cillenum
Panagæus	Pterostichus	Blethisa

Of *Brachinus* I never knew of but one specimen, and that was *B. crepitans*, being taken near us. Of *Agonum*, *Harpalus*, &c. we have scarce any but the most common and widely-dispersed species, unless *A. sex-punctatum* be an exception. This splendid insect may now and then be found running in the open parts of the woods, especially where the underwood has been lately cut.

In the *Dytiscites*, notwithstanding our want of streams and large pieces of water, we are better off, as there are only the genera *Agabus*, *Hydaticus*, *Graphoderus*, *Leionotus*, *Cybister*, and *Orectochilus*, which we do not possess; and of the other genera we frequently take some of the more uncommon species.

In the *Rypophaga* we want—

Dryops	Sphærites	Synchita
Georssus	Thymalus	Cicones
Elmis	Pria	Cerylon
Enicocerus	Philoophilus	Crypta
Hydrous	Byphylus	Bitoma
Spercheus	Triplax	Lasioderma
Tritoma	Mycetophagus	Paramecosoma
Alexia	Tetratomia	Holoparamecus
Corylophus	Ips	Xylotrogus
Sericoderus	Nemosoma	Tiresias
Scaphidium	Colydium	

The extreme rarity of *Boleti*, or, as they are commonly called, *saps*, on the trees about us, account for the absence of some genera; others cannot be expected to occur here; and if any of the minute genera, whether honoured with a name of six syllables in length, or doomed to rest content with only two, really occur here, they have as yet escaped me.

Of some genera, as *Leiodes*, *Octhebius*, *Micropeplus*, and *Necrodes*, we rarely find a specimen; other genera and species, on the contrary, abound. *Necrophorus humator* and *mortuorum*, *Oiceoptoma thoracica*, many species of *Catops* and *Nitidula*, are in unusual abundance. Perhaps it may be worth my mentioning, that *N. vespillo* is here very scarce, whilst *N. mortuorum* is so common that I have taken dozens out of one decaying rook.

In the *Helocera*, *Trinodes*, *Limnichus*, *Syncalypta*, *Nosodendron*, *Oomorphus*, *Simplocaria*, *Onthophilus*, and *Platysoma*, are those genera which do not occur here. Our soil and situation will account for the absence of most of these, as well as for the scarcity of the *Byrrhi*, of which we only take *B. pilula* and *sericea*: the former of these is not very common here.

In the *Lamellicornes* we are a little deficient. Of the *Lucanites*, *Dorcus parallelipipedus*, and *Lucanus cervus*, are the only species taken here, both very rarely; the latter is, I am told, more common at Loughton. Of the other *Lamellicornes*, we have *Typhaeus*, *Geotrupes*, *Aphodius* (numerous), *Trox (sabulosus)* only, and that very rare), *Serica* (rare), *Melolontha*, *Hoplia* (rare), *Cetonia aurata* (rare). The other genera do not occur, neither do any of the *Buprestites* in the next division.

All the species of *Elater*,—as the genus now stands in Mr. Stephens's Nomenclature,—are strangers to us, (except *E. bipustulatus*). Also,

Cerophytum	Atopa	Gibbium
Eucnemis	Drilus	Lasioderma
Sericus	Lycus	Dorcatoma
Ectinus	Enicopus	Ochina
Lepidotus	Dolichosoma	Choragus
Drasterius	Opilus	Bostriechus
Ludius	Thanasimus	Apate
Selatosomus	Clerus	Dinoderus
Cardiophorus	Xyloctenus	Trypodendron
Ctenonychus	Mezium	Platypus

Of the *Rhyncophora* I have so many hundred unexamined specimens, that I dare not venture to give a list of what I imagine that we do not possess. And the same may be said of the *Brachytra*.

Notwithstanding the abundance of wood in this part, the *Longicornes* are but little numerous; we only take,

Trogosita Mauritanica	Clytus arietis	Rhagium bifasciatum
Prionus coriarius (rare)	areatus (rare)	Toxotus meridianus
Cerambyx moschatus (rare)	Callidium violaceum (very rare)	Leptura elongata
Pogonocerus hispidus (rare) nebulosus	variable alni (rare)	scutellata (rare) melanura
Saperda populnea	Obrium minutum	levis
Tetrops praestata	Rhagium inquisitor	ruficornis
Clytus mysticus		Pachyta livida

From the above list it will be seen that we do not possess one-third of the British species of this division; and that of these, seven are of rare occurrence here.

A large portion of the *Eupoda*, and also of the *Cyclica* and *Trimeri*, belong to our locality; but the finer species of the second group, as *Chrysomela lamina*, *C. Banksii*, *C. fulgida*, *C. graminis*, *C. sanguinolenta*, and others, which in some parts are common, are wanting here. *Zeugophora subspinosa* abounds on the young aspens in Park-hall woods; *Z. flavidollis* I have only once taken. The following genera do not occur here.

Macroplæa	Diaperis	Orchesia
Auchenia	Phaleria	Mordella
Calomericus	Bolitophagus	Rhipiphorus
Cardiapus	Opaturum	Rhipididius
Dibolia	Heliophilus	Sitaris
Mniophila	Pedinus	Oncomera
Timarcha	Phylan	Nothus
Eumolpus	Crypticus	Conopalpus
Sphaerosoma	Eryx	Lymexylon
Endomychus	Mycetocharus	Meloe
Lycoperdina	Cistela	Cantharis
Hispa	Allecula	Sytaris
Sarrotium	Philopteryx	Notoxus
Hypophlaeus	Dircaea	Aderus
Stene	Hypulus	Xylophilus
Uloma	Albdera	Euglenes
Alphitobius	Scraiptia	Eutheia
Alphitophagus	Hallomenus	

Of the *Orthoptera* I can say but little, except that we are deficient in the larger species; and as to the *Neuroptera*, I

must confess to a plentiful degree of ignorance as to names. Of *Libellulites* we have most of the species at all common, as well as those I have mentioned above. I have only taken here *Sialis lutarius*, and two only of the *Perlites*. In the *Phryganites*, *Neuronia fusca* and *Phryganea grandis*, which, I have been told, are considered rare, are both common here, especially the former.

The genera *Cimbex*, *Clavellaria*, *Amasis*, *Lophyrus*, *Messa*, *Melicerta*, *Tarpa*, and *Janus*, I have not found here; but of the other *Tenthredinina*, we have a fair proportion; some not very common species occurring, as *Zaræa fasciata*, *Hylotoma Anglicæ*, *H. ustulata*, *H. segmentaria*, *Schizocerus pallipes*, *Cladius difformis*, *C. Geoffroyi*, *C. pallipes*, *Cræsus septentrionalis*, *Selandria alni*, *Allantus microcephalus*, &c. Of the genus *Lyda* we have only *L. sylvatica*, the larva of which feeds in companies on the pear. Of *Cephushæcda* we find only *C. pygmæus*. Of the fossorial *Hymenoptera* we have but few species, but perhaps more than I am aware of, as I have not paid to these all the attention they deserve. Of the *Apina*, we have about, or rather more than half, the British species; amongst which are *Stelis aterrima*, *Heriades campanularum*, *Megachile circumcincta*, and *M. Xanthomelæna*, *Cælionys conica*, *Apathus rupestris*, &c. Of the other *Hymenoptera* I can say nothing certain. *Stylops Dalii* I have taken here, as I have before mentioned.

I now come to the *Lepidoptera*; and of the species of this order which I have taken here I must give a full list, as far as the *Platypterycidæ*, and to this I shall append some observations on certain species.

<i>Gonepteryx rhamni</i>	<i>Hipparchia Galathea</i>	<i>Acherontia Atropos</i>
<i>Colias electra</i>	<i>Tithonus</i>	<i>Sphinx convolvuli</i>
<i>Pontia brassicae</i>	<i>Janira</i>	<i>ligustrum</i>
chariclea	<i>Hyperanthus</i>	<i>Dellephila galii</i>
rapæ		<i>Elpenor</i>
metra	<i>Thecla betule</i>	<i>Porcellus</i>
napi	<i>W. album</i>	<i>Macroglossum stellarum</i>
<i>Mancipitum cardamines</i>	<i>quercus</i>	<i>Sesia bombyliformis</i>
<i>Leucophasia sinapis</i>	<i>rubi</i>	<i>fuciformis</i>
<i>Melitæa Silene</i>	<i>Lycæna Phæbas</i>	<i>Ægeria ichneumoniformis</i>
Euphydryas	<i>Polyommatus Argiolus</i>	<i>culiciformis</i>
<i>Argynnis Adippe</i>	<i>Alexis</i>	<i>tormiciformis</i>
Paphia	<i>Argus</i>	<i>tipuliformis</i>
<i>Vanessa C. album</i>	<i>Thymele alveolus</i>	<i>Hepialus hectus</i>
Polychloros	<i>Tages</i>	<i>lupulinus</i>
urticæ	<i>Pamphila linea</i>	<i>humuli</i>
Io	<i>sylvanus</i>	<i>sylvinus</i>
Atalanta	<i>Ino statices</i>	<i>Zeuzera Æsculii</i>
<i>Cynthia cardui</i>	<i>Anthrocera trifolii</i>	<i>Cossus ligniperda</i>
<i>Apatura Iris</i>	<i>filipendulae</i>	<i>Pygæra bucephala</i>
<i>Hipparchia Ægeria</i>	<i>Smerinthus tiliae</i>	<i>Closteria reclusa</i>
Megæra	<i>populi</i>	<i>Episema cæruleocephala</i>
	<i>ocellatus</i>	

Cerura vinula	Caredrina ambigua	Leucania pallens
Stauropus fagi	sepii	Phlogophora meticulosa
Notodontia Zizzac	cubicularis	Cucullia verbasci
Leiocampa dictæa	alsines	umbratice
dictæoides	glareosa	lactuce
Lophopteryx carmelita	Glæa vaccinii	Eremobia ochroleuca
camelina	polita	Abrostola triplasia
Ptilodontis palpina	satellitia	Urticæ
Ptilophora variegata	Amphipyra pyramidæa	Plusia Iota
Chaonia Dodonea	Pyrophila tetra	percontationis
Petasia Cassinea	Nænia typica	Gamma
Saturnia carpini	Xylinæ rhizolitha	chrysitis
Lasiocampa rubi	putris	Anarta heliaca
roboris	Calocampa exoleta	Eristria fuscula
Trichiura crataegi	Xylophasia lithoxylea	Phytometra ænea
Pæciocampa populi	polyodon	Acosmetia arcuosa
Eriogaster lanestris	rurca	lincola
Lasiocampa neustria	combusta	Mormo maura
Odonestis potatoria	Epomidion	Catocala nupta
Gastropacha quercifolia	Hadena remissa	sponsa
Psilura monacha	Thalassina	Brephæ Parthenias
Dasychia pudibunda	Genistaæ	natha
Demas coryli	contigua	Euclidia mi
Orgya antiqua	plebeia	glyphica
Leucoma salicis	Lithorhiza	Fidonia atomaria
Porthesia chrysorrhœa	capsincola	Anisopteryx leucophæaria
auriflua	Saponariæ	æscularia
Arctia caja	Heliothis popularis	Hibernia capreolaria
Phragmatobia fuliginosa	Mamestra furva	prosaparia
Spilosoma menthastri	pisi	defoliaria
lubricipeda	brassicæ	Phigalia pilosaria
Diaphora mendica	Chenopodiæ	Nyssia hispidaria
Fumea muscæa	Persicariae	Biston prodromarius
Callimorpha Jacobæa	Euplexia lucipara	betularius
miniata	Hania basilinea	Hinera pennaria
Lithosia gilveola	testacea	Crocallis elinguaria
complana	Apamea nictitans	Odontopera bidentata
griseola	didyma	Geometra alniaria
Gnophria rubricollis	oculea	querċinaria
Setina eborina	I. niger	illunaria
Triphæna orbona	furca	Julianaria
pronuba	Miana literosa	lunaria
innuba	strigilis	illustriaria
fimbria	Æthiops	Pericallia syringaria
interjecta	humeralis	Angerona prunaria
Janthina	terminalis	Rumia cratægata
Cerigo texta	fasciuncula	Ourapteryx sambucaria
Lytea umbrosa	Miselia Oxyacanthæ	Campæa margaritaria
Rusina ferruginea	Aprilina	Hipparchus papilionarius
Agrotis æqua	compta	Hemitea vernaria
suffusa	Polia advena	cytharia
segetum	bimaculosa	Cleora bajularia
radiola	herbida	lichenaria
exclamationis	flavocincta	Alcis repandaria
hortorum	dysodea	destrigaria
Graphiphora augur	seladonia	rhomboidaria
brunnea	Apatela aceris	Hemerophila abruptaria
triangulum	Acronycta megacephala	Boarmia abietaria
baja	ligustrî	tetragonaria
festiva	Psi	crepuscularia
punicea	tridens	consonaria
C. nigrum	rumicis	extersaria
plecta	Bryophila perla	punctularia
Semiophora gothica	Thyatira derasa	Halia vanaria
Orthosia instabilis	batis	Numeria pulveraria
munda	Scoliopteryx libatrix	Cabera pusaria
sparsa	Ceropacha duplaris	exanthemata
stabilis	diluta	Ephyra omicronaria
cruda	flavicornis	pendularia
litura	ridens	orbicularia
pistacina	Tethea subtusa	porata
lunosa	retusa	punctaria
flavilinea	Bombycia viminalis	trilinearia
macilenta	Cosmia affinis	Bradypetes amataria
Upsilon	trapetzina	Epione apicaria
Mythimna grisea	Xanthia gilvago	Eurymene dolabaria
conigera	flavago	Phasiane plumbaria
Grammæsia trilinea	Nonagria Typhae	Larentia cervinata
bilinea	Leucania commata	chenopodiata
Segetia xanthographa	impura	multistrigaria

Cidaria munitata	Melanippe hastata	Minoa chærophyllata
unidentaria	Xerene procellata	euphorbiata
ferrugata	adustata	Bapta punctata
mariaria	rubiginata	Emmelesia decolorata
montanata	Euthalia miata	turbaria
fluctuata	elutata	albulata
propugnata	Lozogramma petraria	candidata
Harpalyce fulvata	Scotisia rhamnata	luteata
ocellata	betulata	Strenia clathrata
substristata	Triphosa cervinata	Venilia maculata
sylvaticata	dubitata	Ptychopoda dilutaria
bianigulata	Camptogramma bilineata	Acidalia osseata
silaceata	Eucosmia undulata	virgularia
corylata	Chesias spartaria	aversata
Polyphasia immanata	Oporinia dilutata	remutata
marmorata	Cheimatobia brunnata	subsericeata
comma-notata	rupicaprina	lactata
centum-notata	Lobophora polycommata	floslactata
perfusata	viretata	Pæcilio phasia marginata
Steganolophia prunata	hexapterata	Chlorissa thymaria
Lampropteryx sulfumata	Eupithecia rectangulata	putataria
badiata	V. ata	Timandra imitaria
Anticlea rubidata	absinthiata	Ania emarginata
derivata	minutata	Ennomos flexula
Electra spinachiata	marmorata	Drepana falcataria
testata	simplicata	hamula
pyraliata	And some other species, of the	unguicula
Anaitis plagiata	names of which I am not	
Abraxas grossulariata	quite certain.	

To be continued.

ART. XV.—*Observations on the British Cynipites.*

By FRANCIS WALKER.

THE *Cynipites*, like other tribes of insects, have some characters which are nearly constant, and some which vary much. Among the former, are the head, the joints of the antennæ, and the nervures of the wings; among the latter, the habits and economy, the thorax, and, still more, the abdomen. The greatest variation is between *Anacharis* and *Ibalia*.

The whole tribe were formerly called gall-flies, and it was supposed that they laid their eggs in plants, which their grubs caused to swell around them, and to form excrescences, or galls. It may be inferred, from the recent discoveries of Entomologists, that only a very small portion of the British species live thus; the rest are parasitic upon other insects. The external characters are sometimes very similar, although the economy is different; *e.g.* the species of the 10th and 23d groups in the following arrangement, move slowly, counterfeit death when touched, have the abdomen compressed, and the fore-wings very long and broad. *Cynips aptera* lives under ground, forms galls on roots, and is infested by *Callimome roboris*;

C. megaptera inhabits round berry-like galls on the trunks of trees; *C. rosæ* forms the mossy galls met with on rose-bushes; and the oak-apples are produced by a fourth species.

I am indebted to Mr. Haliday for much valuable information of the structure and economy of these insects, of which there are more than one hundred British species.

I.—(Anacharis, *Dalman.*) *Ent. Mag.* Vol. II. p. 518.

II.—(Ægilips, *Haliday.*) Corpus mediocre, compactum, convexum, atrum, lœve, nitens, parce et breviter hirtum: caput transversum, subquadratum, thorace paullo latius, lœvissimum, nitidissimum: mandibulae mediocres, quadratae, subarcuatae, dentibus magnis acutis 3 armatae: maxillæ longæ, graciles, subarcuatae; laciniae acuminatae, intus lobatae; palpi 4-articulati, graciles, longitudine mediocri; articuli 1^{us}. et 2^{us}. mediocres lineares subæquales, 3^{us}. longicyathiformis intus apice angulatus 2°. paullo brevior, 4^{us}. fusiformis fere linearis 3°. longior et gracilior: labium longum, angustum, lanceolatum; palpiger furcatus; ligula brevis, lata, ciliata; palpi 3-articulati, breves, clavati; articuli 1^{us}. et 2^{us}. graciles, lineares, hic brevissimus; 3^{us}. angusti-ovatus, 1°. longior et crassior: antennæ articulis mari 14, fem. 13, filiformes, corpore paullo longiores, breviter pubescentes; articuli 1^{us}. et 2^{us}. nitidi, hic subrotundus parvus, ille fusiformis validus; sequentes ad postremo proximum subfiliformes, basi et apice paullo angustiores, longitudine gradatim decrescentes; ultimus acuminatus, præcedente longior et gracilior: thorax ovatus, altus, postice angustior, supra transverse scitissime undatus: prothorax supra brevissimus vix conspicuus: mesothorax maximus; parapsidum suturæ bene determinatae, punctatae, postice mutuo accedentes; paraptera et epimera conspicua; scutellum extans, plus minusve exsculptum, parum nitens, apice abrupte declive, dum supra conspicitur ovatum, tum a latere angulum subacutum fingens: metathorax mediocris, scaber, obscurus, declivis: petiolus brevis, gracilis, teres, glaber, parum nitens, scite impressus et sulcatus, metathorace infimo insertus: abdomen ovatum, glabrum, thorace angustius et plerunque paullo brevius, non compressum nec acuminatum; segmenta 6 transversa recta supra conspicua, basale maximum, sequentia ad apicale gradatim decrescentia; segmenta ventralia laminâ angustâ occulta; oviductus minutus, reconditus: pedes graciles, simplices, recti, brevissime pubescentes; tibiæ apice bispinosæ; protibiæ spina unica longa valida curva armatae; tarsi articulis 1°. ad 4^{um}. longitudine decrescentibus, 5^{us}. 4°. longior; ungues et pulvilli

parvi; protarsi articulo 1^o. subtus inciso: alæ mediocres, brevisimè pubescentes; proalæ nervus longitudinalis alæ basi emergens, sub costam spatio excurrens, dein abrupte flexus illam attingens et alæ apicem accedens; transversus basalis longitudinali subcostali decedens, in alæ discum recte declivis et desinens; transversus medius longitudinali ad angulum progreditur, in alæ discum excurrit ubi extimo transverso recurrente jungitur et conficitur: nervus quoque spurius sæpe manifestus alæ basi emergens ad nervi transversi basalis apicem furcillatus, furcæ alæ apicem attingentes, una ad nervorum medii et extimi concursum angulum fingens, altera quoque angulum fingens margini postico accidentem: metalæ nervo unico subcostali simplici.

Fem. antennæ paullo breviores articulo ultimo præcedentis latitudine non acuminatus.

Sect. I. corpore breviore antennis crassioribus petiolo brevissimo sulcato aliterque distinguendæ, æstivæ s. autunnales, quercetis tiliisque apricis frequentes.

Ex. *Anacharis rufipes*, *Westwood*; *A. fumipennis*, *Westwood*; *Cynips nitidula*, *Dalman*.

III.—Sect. II. similis: antennæ extrorsum crassiores; articuli 9^o. ad 12^{um}. præcedentibus manifeste latiores; ultimus adhuc latior, ovatus: mesothoracis scutellum summo apice productum acuminatum, inde ad infimum basin retractum, ideoque angulum acutum fingens; alæ longæ.—Species unica *Scotiæ* incola.

IV.—(*Melanips*, *Haliday*.) Corpus mediocre, compactum, altum, atrum, nitens, breviter hirtum: caput transversum, subquadratum, laeve, thoracis vix latitudine, postice sulcis transversis rugosum: oculi mediocres, laterales, globosi: ocelli in triangulo supra verticem positi, spatium circumstantes elevatum; medius paullulum ante laterales prostans: antennæ articulis *mari* 14, *fem.* 13, filiformes, corporis longitudine aut paullo breviores, breviter pubescentes; articuli 1^{us}. et 2^{us}. nitidi, hic subrotundus parvus, ille fusiformis validus; 3^{us}. subtus concavus; sequentes ad postremo proximum subfiliformes, basi et apice paullo angustiores, longitudine gradatim incrementantes; ultimus acuminatus, præcedente paullo longior: thorax ovatus, altus, fere laevis, rarius scitissime et confertim punctatum obscurum: prothorax supra brevissimus utrinque latior: mesothorax maximus; scutum medio ad apicem trisulcatum; parapsidum suturæ bene determinatae, punctatae, postice mutuo accedentes; paraptera et epimera magna; scutellum extans, exsculptum, obscurum, basi

nonnunquam bifoveolatum, postice abrupte declive, dum supra conspicitur brevi ovatum, tum a latere angulum rectum minus determinatum quam Sect. I. fingens: metathorax mediocris, scaber, obscurus, declivis, utrinque hirtus: petiolus crassus, brevissimus, vix conspicuus, punctatus, parum nitens: abdomen longiovatum, non acuminatum, altius quam latum, thorace angustius et brevius, lœve, nitidissimum, glabrum, nonnumquam oculo armato scitissime punctatum; segmenta 1^{um}. et 2^{um}. maxima, subæqualia, fere dorsum omne occupantia, illum basi utrinque hirtum; sequentia brevissima, vix conspicua: oviductus longus, rectus: pedes ut 1^o. at crassiores: alæ mediocres, brevissime pubescentes; nervi genuini ut Sectione I^o.: nervi transversi medius et extimus angulum fingentes obtusorem ideoque cum nervo longitudinali spatium includentes longius: nervi spurii plerunque bene determinati rarissime omnino obliterati, ad nervorum medii et extimi concursum spatium includentes triangulare: metalæ nervo unico subcostali ramulum rejiciente abbreviatum.

Fem.—*Mari* similis: antennæ breviores: abdomen altius, apice acutius; segmenta subtus expassa.

Parasitæ, levipedes.

V.—Sect. IV. similis: *mari* antennæ corpore longiores, articulis 4^o. ad 13^{um}. longitudine æqualibus: *fem.* antennæ extrorsum crassiores corpore breviores; articuli 4^o. ad 12^{um}. longitudine æquales: scutellum scaberrimum, basi utrinque foveolatum.

VI.—(Onychia, *Haliday*).—Sect. IV. affinis: antennæ *mari* 14-articulatae corporis longitudine, *fem.* 13-articulatae paullo breviores: thorax obscurus, scaber; scutellum sulcatum, productum, acuminatum: petiolus brevis, gracilis: abdomen lœve, nitidum; segmentum 1^{um}. reliqua omnino obtegens: alæ mediocres; nervi spurii fere obsoleti.

Species unica, *Evania ediogaster*, *Rossi*.

VII.—Sect. II. similis: caput thorace angustius: *mari* antennæ subsetaceæ, corpore multo longiores; articuli 4^o. ad 12^{um}. longitudine incrementales; 13^{us}. 12ⁱ. vix longitudine; 14^{us}. paullo longior: thorax longiovatus, convexus: mesothorax lœvissimus, nitidissimus; scutum medio apice impressum, parapsidum suturæ postice profundiores; scutellum non extans, basi utrinque foveolatum, apicer leniter declive non angulatum: petiolus quasi bipartitus: abdomen longiovatum; segmenta 1^{um}. et 2^{um}. maxima, subæqualia; sequentia brevissima: alæ quam Sect. I. ampliores; nervi haud aliter Sect. IV.

VIII.—(Figites, *Latreille*.) Caput scabrum, parum nitens: mandibulae quadratae, subarcuate, dentibus una 2 obtusis altera 3 acutis armatae: maxillae longae, graciles, subarcuatæ; laciniæ acuminatae, intus lobatae; palpi 4-articulati, graciles, extrosum crassiores, articulus 1^{us}. brevis, 2^{us}. et 3^{us}. longiores, 4^{us}. adhuc longior, fusiformis: labium longum, obconicum; palpiger fuscatus; ligula brevis, lata, ciliata; palpi 3-articulati breves, articulus 1^{us}. mediocris, 2^{us}. multo brevior, 3^{us}. fusiformis setosus 1°. longior: *mari* antennæ subsetaceæ, corpore paullo longiores; articuli 4°. ad 14^{um}. longitudine incrementales: *fem.* antennæ subclavatae moniliformes, corpore breviores; articuli 4°. ad 12^{um}. ovati longitudine decrescentes, latitudine crescentes, 13^{us}. 12°. multo latior et fere duplo longior: prothorax punctatus: mesothoracis scutum lave, medio apice impressum, parapsidum suturæ postice profundiores; scutellum extans, scaberimum, basi utrinque profunde excavatum, ante apicem transverse impressum, postice angulum rectum fingens: metathorax utrinque projectus: petiolus brevis, crassus, quasi bipartitus, profunde sulcatus, parum nitens: abdominis segmentum 1^{um}. mediocre, basi nonnunquam sulcatum, utrinque basin versus abrupte retractum; 2^{um}. maximum; reliqua minima: alarum nervi transversi extimus et medius tenues, angulum acutiorem fingentes spatium ideoque eum nervo longitudinali brevius quam Sect. III. includentes; nervi spurii triangulum ad nervorum medii et extimi concursum fingentes, saepissime obsoleti.

Parasitæ.

IX.—Corpus mediocre, compactum, convexum, atrum, nitens, lave, breviter et parce hirtum: caput thorace angustius, postice subtilissime punctatum: oculi et ocelli ut Sectione I.: antennæ 14-articulatae, clavatae, graciles, corpore paullo breviores, breviter pubescentes; articuli 1^{us}. et 2^{us}. crassi, hic breviovatus, ille longicyathiformis; 3^{us}. et sequentes ad 13^{um}. longitudine et latitudine crescentes; 14^{us}. ovatus, 13°. latior et duplo longior: thorax ovatus, subtilissime punctatus: prothorax brevissimus: mesothorax maximus, scuti parapsidum suturæ conspicuae, postice mutuo accidentes; scutellum non extans, basi impressum, apice leniter declive non angulatum: metathorax mediocris, quadratus, abrupte declivis: petiolus brevissimus, obscurus, punctatus: abdomen longiovatum, laveissimum, nitidissimum, glabrum, thorace paullo longius et angustius; segmentum 1^{um}. mediocre, pilis albis basi utrinque dense hirtum; 2^{um}. maximum; reliqua minima: pedes gracillimi; tarsi longi: alæ amplæ, dense

pubescentes; nervi genuini costæ medium vix attingentes; nervus transversus medius nervi 1^o. ex quo costam attingit ad nervum transversum extimum longitudine; nervi spurii bene determinati, ad nervorum extimi et medii concursum simplices: metalae nervo unico subcostali, ramulum rejiciente brevem.

X.—(Eucoila, *Westwood.*) Corpus breve, altum, nitens, lœve, fere glabrum: caput subquadratum, parvum, breve, thorace angustius: oculi et ocelli ut Sectione I.: mandibulæ quadratae, subarcuatæ, dentibus una 2 obtusis, altera 3 acutis armatae: maxillæ longæ, angustæ, intus rectæ, extus convexæ; laciniæ acuminatæ, intus lobatae; palpi 4-articulati, graciles, apice crassiores, articulus 1^{us}. longissime cyathiformis, 2^{us}. dimidio brevior apice crassior, 3^{us}. gracillimus 1^o. longior, 4^{us}. fusiformis 3^o. brevior sed multo latior: labium longum, angustum, postice acuminatum; palpiger furcatus; ligula brevis, latissima, ciliata, postice angustior; palpi 3-articulati, crassi, breves, articulus 1^{us}. longus apice latior, 2^{us}. brevissimus, 3^{us}. mediocris longiovatus: *mari* antennæ articulis 15, setacea, corpore dimidio aut duplo longiores, brevissime pubescentes; articuli 1^{us}. et 2^{us}. nitidi, hic subrotundus, ille cyathiformis validus; sequentes ad 14^{um}. longi, filiformes, paulatim longitudine incrementales latitudine decrescentes; 15^{us}. 14^o. paullo brevior aut longior: *fem.* antennæ articulis 13, subclavatae, corporis dimidio paullo longiores, breviter hirtæ; articulus 3^{us}. longus, subfiliformis; 4^{us}. et sequentes ad 13^{um}. ovati, longitudine et latitudine paullatim crescentes: thorax ovatus: prothorax supra brevissimus, utrinque latior, antice hirtus: mesothorax maximus; scutum latissimum, non sulcatum; parapsides in unum confusa; scutellum extans, scabrum, obscurum, basi utrinque foveolatum, medio quasi catilliferum, postice subproductum pilis nonnullis rigidis hirtum: metathorax mediocris, declivis, parum nitens, utrinque pilis albis hirtum: petiolus brevissimus, ægre discernendus: abdomen longiovatum, altum angustum, compressum, contractum, thoracis longitudine; segmentum 1^{um}. maximum, reliqua omnino obtegens, basi pilis albis densissime hirtum, subtus aciem fingens; oviductus longus, spiralis; pedes et Sectione I.: alæ brevissime pubescentes, apice breviter ciliatae: proalæ maximæ: nervus longitudinalis ut Sectione I.; nervi transversi medius et extimus longiores subundati; nervi spurii saepe optime determinati ad genuinas aspirantes, ubi medi et extimi attingunt angulum simplices.

Parasitæ, tardipedes.

XI.—*Mas* et *Fem.* Sect. X. similis: antennæ articulis 4^o. ad 14^{um}.

longitudine decrescentibus; *mari* 3^{us}. maximus 4°. duplicato longior, *fem.* mediocris.

Species unica.

XII.—*Mas* et *Fem.* Sect. X. similis: *fem.* antennæ clavatæ; alæ minores, ciliatæ; nervi transversi breviores recti; nervi spurii obsoleti.

XIII.—*Fem.* Sect. X. similis: antennæ subclavatæ; articuli 3°. ad 6^{um}. latitudine subæquales, 7°. ad 13^{um}. multo latiores.

XIV.—*Fem.* Sect. X. similis: antennæ clavatæ; articuli filiformes, 3°. ad 7^{um}. latitudine æquales, 8°. ad 12^{um}. latitudine crescentes; 13^{us}. 12°. latior et duplo longior.

XV.—(Kleidotoma, Westwood.)—*Mas* et *Fem.* Sect. X. similis: *mari* antennæ submoniliformes; articuli 4°. ad 13^{um}. longiovati: *fem.* antennæ clavatæ; articulus 2^{us}. longicyathiformis; 3^{us}. et sequentes ad 10^{um}. brevissimi, subrotundi; 11^{us}. 12^{us}. et 13^{us}. multo latiores: mandibulæ quadratae, subarcuatæ, dentibus una 2 obtusis, altera 3 acutis armatae: maxillæ longæ, angustæ, intus rectæ, extus convexæ; laciniae acuminatæ, intus lobatae; palpi 4-articulati, graciles, extrorsum crassiores, articuli 1^{us}. et 2^{us}. mediocres, 3^{us}. longior et gracilior, 4^{us}. fusiformis latior: labium longum, angustum, postice acuminatum; palpiger furcatus; ligula brevis, lata, ciliata; palpi breves, articulus 2^{us}. brevissimus: alæ longius ciliatæ; nervi medium non attingentes.

XVI.—*Fem.* Sect. X. similis: antennæ clavatæ; articuli 3°. ad 9^{um}. angusti, latitudine gradatim crescentes, longitudine subæquales; 10°. ad 13^{um}. multo latiores.

XVII.—*Fem.* Sect. XIII. similis: articulus 11^{us}. 10°. longior, 12^{us}. et 13^{us}. multo latiores.

XVIII.—*Fem.* Sect. X. similis: antennæ clavatæ; articuli 4°. ad 8^{um}. angusti, longitudine crescentes; 9°. ad 13^{um}. multo longiores, longiovati, longitudine et latitudine crescentes.

XIX.—*Mas* et *Fem.* Sect. VIII. similis: *mari* antennæ submoniliformes; articulus 4^{us}. 3°. multo longior et latior; *fem.* articuli 3^{us}. et 4^{us}. longitudine æquales.

XX.—*Mas* et *Fem.* Sect. XIII. similis: thorax et abdomen valde compressa: alæ minimæ vix ullæ: *mari* antennæ articulo 3°. valde arcuato.

Species *unica* (*Figites subapterus*, *Ent. Mag.* Vol. II. p. 117,) ad littora maris degit.

XXI.—*Fem.* Sect. VIII. similis : antennæ subclavatæ, corporis longitudine ; articuli 1^{us}. et 2^{us}. cyathiformes, hic brevior et angustior ; 3^{us}. longus, filiformis ; 4^{us}. brevior ; sequentes ad 13^{um}. longitudine subæquales, latitudine crescentes : alæ brevissimæ.

XXII.—*Fem.* Sect. XXI. similis : proalæ amplissimæ : metalæ angustæ.

XXIII.—(*Cynips*, *Linné.*) *Mas* et *Fem.*—Corpus breve, angustum, convexum, nonnunquam pube sericea tectum : caput parvum, breve, thorace angustius, subquadratum, scabrum, obscurum transversum : oculi et ocelli ut Sectione I. : mandibulæ quadratae, tridentatae, subarcuatæ ; dens externus longus acutus, 2^{us}. et 3^{us}. approximati, hic obtusus ille acutus : maxillæ longæ, angustæ, fere rectæ ; laciniae acuminatae, intus lobatae ; palpi 4-articulati, breves, validi, extrorsum crassiores, articulus 1^{us}. longus apice latior, 2^{us}. et 3^{us}. paulo breviores lineares, 4^{us}. fusiformis 3°. latior et multo longior apice obtusus : labium longum, obconicum, antice abrupte angustius ; palpiger furcatus ; ligula brevis, lata, ciliata ; palpi 3-articulati breves, validi, subclavati, articulus 1^{us}. longicyathiformis, 2^{us}. brevis, 3^{us}. fusiformis 1°. longior : *mari* antennæ 15-articulatae, subsetacea, corpore longiores ; articulus 1^{us}. cyathiformis crassus ; 2^{us}. subrotundus angustior : 3^{us}. longus, subtus incisus ; sequentes ad 15^{um}. longitudine decrescentes : *fem.* antennæ 14-articulatae, filiformes aut extrorsum crassiores corporis longitudine aut paulo breviores ; articulus 14^{us}. accuminatus, 13°. longior : thorax ovatus, altus, scaber, obscurus nonnunquam lævis ; prothorax brevissimus, supra vix conspicuus : mesothoracis scutum læve, nitens, saepe glabrum, parapsidum suturæ bene determinatae, postice mutuo accedentes ; scutellum extans, breviovatum, subproductum : metathorax brevis, abrupte declivis : petiolus gracilis, brevissimus, lævis, nitens : abdomen ovatum, compressum, nitens, læve, fere glabrum : segmentum 1^{um}. maximum ; reliqua brevissima : sexualia occulta : oviductus in spiram convolutus : pedes ut Sectione I. : alæ amplissimæ, nervus longitudinalis ubi nervo transverso medio jungitur quasi disceptus, ante costam attingit abruptus : nervus transversus extimus longissimus, versus alæ apicem productus : medius brevis arcuatus : basalis ad radicem alæ propensus : nervi spurii optime determinati genuinos fingentes, areolam triangulam ad nervorum extimi et medii

concursum fingentes: metalæ nervo unico subcostali ramulum rejiciente longum.

Tardipedes, gallicolæ, (*Cynips megaptera*, *Panzer*, &c.)

XXIV.—*Mas et Fem.* Sect. XXI. similis: antennæ moniliformes; thorax angustus; segmenta non bene determinata; scutellum non extans nec productum: abdominis segmentum 1^{um}. magnum; sequentia breviora: alæ nullæ.

Species *unica* (*Cynips aptera*, *Fabricius*) radicibus subterraneis gallicola.

XXV.—*Mas et Fem.* Sect. XXI. similis: abdomen minus compressum: antennæ moniliformes; *mari* 14-*fem.* 13-articulatæ, 3^{us}. quasi tortus, subtus arcuatus, apice dilatatus: abdomen thorace brevius et angustius; segmentum 1^{um}. magnum reliqua breviora: alæ mediocres; nervus transversus extimus quam Sect. XXI. brevior.

XXVI.—*Mas et Fem.* Corpus mediocre, convexum, subtilissime scabrum, parce hirtum: caput breve, subquadratum, thoracis latitudine: trophi minimi: mandibulæ quadratae, bidentatae, fere rectæ; dentes acuti: maxillæ longæ, angustæ, fere rectæ; laciniæ acuminatae, intus lobatae; palpi 3-articulati?, breves, clavati, apice setosi; articulus 1^{us}. longicyathiformis, 2^{us}. brevis, 3^{us}. longiovatus: labium angustum; palpiger furcatus; ligula brevis, lata, ciliata; palpi 2-articulati?, brevissimi; articuli lati, subrotundi: *mari* antennæ 15-articulatae, filiformes, corporis longitudine; articulus 1^{us}. cyathiformis; 2^{us}. subrotundus; 3^{us}. longus, gracilis, teres; sequentes ad 15^{um}. curtantes: *fem.* antennæ paullo breviores, extrosum crassiores; articulus 14^{us}. 13°. major: thorax ovatus: prothorax supra vix conspicuus: mesothoracis parapsidum suturæ bene determinatae, postice mutuo accedentes fere occurrentes: scutellum extans, fere rotundum, postice declive: metathorax mediocris declivis: petiolus brevissimus: abdomen ut Sect. XXIII.: alæ mediocres; nervi ut Sect. XXIII., extimus transversus brevior.

Tardipedes, gallicolæ (*Cynips lenticularis*, *Olivier*, &c.)

XXVII.—*Mas et Fem.* Corpus mediocre, convexum, hirtum: caput subquadratum, thorace paullo latius, scite punctatum, postice angustius: *mari* antennæ 15-articulatae, filiformes, corpore longiores; articulus 1^{us}. brevicyathiformis; 2^{us}. rotundus; 3^{us}. longus, gracilis, linearis; sequentes ad 18^{um}. curtantes; 14^{us}. 13°. paullo longior: *fem.* antennæ 14-articulatae, paullo breviores: thorax ovatus: prothorax supra vix conspicuus: mesothoracis scutum subtilissime squameum; parapsidum suturæ

bene determinatae, postice mutuo accedentes; scutellum brevi-ovatum, extans, scabrum, vix productum, postice declive: metathorax mediocris, declivis: petiolus brevissimus: abdomen ovatum, subcompressum, thorace brevius et angustius, supra glabrum, nitens; segmentum 1^{um}. maximum, reliqua obtengens: alæ amplæ; nervus extimus transversus quam Sect. XXIII. multo brevior.

Cynips Rosæ, Linn. gallicola.

XXVIII.—(Ibalia, Latreille). Corpus longum, gracile, pubescens, parum nitens: caput mediocre, thoracis latitudine, sebrium, subquadratum; vertex inter ocellos parum elevatus: mandibulæ subquadrate, una bidentata, altera tridentata, dentes breves, vix acuti: maxillæ breves, latae, apice intus maxime lobatæ: palpi 5-articulati, mediocres, apice crassiores; articulus 2^{ds}. sat longus; 5^{us}. adhuc longior et crassior, ovato-fusiformis: labium latum, obconicum; ligula brevis, lata; palpi 3-articulati, breves, crassi; articulus 3^{us}. subfusiformis, pilosus, 1ⁱ. et 2ⁱ. fere longitudine: antennæ filiformes, graciles, corpore breviores; *mari* articulis 15, 2^{us}. brevissimus, 3^{us}. intus apice dilatatus, 4^{us}. et sequentes ad 15^{um}. curtantes; *fem.* articulis 13, 1^{us}. validus longicyathiformis, 2^{us}. parvus subrotundus, 3^{us}. et sequentes ad 12^{um}. primo gradatim denique abrupte curtantes; 13^{us}. 12^o. paullo longior: thorax fere cylindricus, transverse sulcatus: prothorax brevis: mesothoracis scutum per medium longe sulcatum; parapsidum suturæ bene determinatae, postice mutuo accedentes; scutellum subquadratum, scabrum, supra planum, postice abrupte declive angulum rectum e latere visum fingens, apice utrinque breviter recurvum et acute productum: metathorax mediocris, declivis, apicem versus utrinque spinis duabus minutis obtusis armatus: petiolus brevissimus: abdomen valde compressum, cultratum, thorace multo longius, segmentis 6 supra conspicuis, *mari* subarcuatum segmentis subæqualibus; *fem.* segmenta 1^{um}. 2^{um}. et 3^{um}. subæqualia; 4^{um}. paullo longius; 5^{um}. magnum, fere ad abdominis apicem productum; 6^{um}. mediocre, apice rotundatum; segmenta ventralia lamina occulta: oviductus supra abdomen recurvum: pro- et mesopedes medios: metapedes longi, validi; coxae magnæ; tarsi articulo 1^o. reliquis una multo longiore: alæ angustæ; proalæ nervus 1^{us}. basi emergens, ad costam proxime excurrens, dein illam attingens et ad alæ apicem accedens; transversus basalis 1^o. subcostali decedens, in alæ discum incurve declivis et desinens; transversus medius brevissimus, 1ⁱ; angulo progreditur, transverso

extimo longissimo ad costam valde proximo mox jungitur et conficitur: nervi 2 ad cellulam minutam sub nervorum medii et extimi concursum, unus e angulo postico alæ apicem attingens, alter ad angulum internum nervi basalis medio jungitur et cellulam majorem perficit; nervus quoque 2^{us}. excurrens 1ⁱ. basi emergens, per marginem posticum progreditur, medio flexus et ramulum brevem postice emittens, apice furcatus; nervus denique per marginem posticum spurius: metaleæ nervus longus costam percurrentis; nervus quoque spurius 1ⁱ. basi emergens, spatio excurrens, ramulum brevem postice emittens, denuo in 1^{um}. rediens.

XXIX.—Corpus breve, altum, compactum, fere glabrum: caput thorace paullo latius: vertex inter ocellos parum elevatus: *mari* antennæ 14-articulatæ, filiformes, corpore paullo longiores; articulus 1^{us}. brevi-cyathiformis; 2^{us}. subrotundus; 3^{us}. longus, subtus parum incisus; sequentes ad 13^{um}. minime curtantes; 14^{us}. 13°. paullo longior: *fem.* antennæ 13-articulatæ, extrorsum crassiores, corpore paullo breviores; articuli 3°. ad 12^{um}. curtantes; 13^{us}. 12°. plus duplo longior: thorax breviovatus, lævis, nitens: prothorax mediocris: mesothoracis parapsidum suturæ conspicuae, postice mutuo accedentes; scutellum subrotundum, scabrum, vix extans, subproductum, postice declive: metathorax mediocris, declivis: petiolus brevissimus, crassus, sulcatus: abdomen ovatum, altum, contractum, nitens, læve, thorace brevius et angustius; *mari* segmenta 1^{um}. et 2^{um}. maxima; reliqua occulta; *fem.* segmentum 1^{um}. sequentia omnia obtegens: pedes breves, validi: alæ mediocres; nervus 1^{us}. costam spatio ante exitum percurrentis; extimus sat longus; medius rectus, ad alæ apicem proclivis; nervi spurii bene determinati, areolam inclientes triangulam.

XXX.—Præcedentis structura: mandibulæ quadratae, subarcuatæ, una tri-, altera bidentata; dentes acuti: maxillæ longæ, angustæ; laciniæ acuminatæ, lobatae; palpi 4-articulati, breves, extrorsum crassiores, articuli 1^{us}. et 2^{us}. mediocres, 3^{us}. brevior, 4^{us}. fusiformis 1°. longior: labium longum, perangustum; palpiger furcatus; ligula brevis, lata, ciliata; palpi 3-articulati, breves, validi, articulus 1^{us}. longi-cyathiformis, 2^{us}. brevissimus, 3^{us}. ovatus 1ⁱ. longitudine: antennæ *mari* articulis 14, 3^{us}. maximus, 14^{us}. 13°. paullo longior; *fem.* articulis 13, 11°. ad 13^{um}. sæpe approximatis quasi clavam fingentibus: thorax scaber, obscurus: mesothoracis parapsides suturis vix conspicuis aut quod alæ extinctæ scuto in unum confuse, scutellum extans: abdomen nitens, læve: alarum nervi sæpe vix conspicui.

Gallicolæ, plerumque minutæ.

XXXI.—(Allotria, *Westwood*).—Sect. XXIX. similis : mesothoracis parapsidum suturæ et alarum nervi spurii omnino obsoleta : palpi maxillares 4-, labiales 3-articulati: antennæ mari 14-, fem. 13-articulatæ filiformes : mesothoracis scutum lævissimum glabrum, scutellum convexum rotundatum : abdomen subcompressum fere globosum. Levipedes, parvæ sæpe minimæ, nonnunquam apteræ, Aphidum corpora parasitice incolentes.

ART. XVI.—*Remarks suggested by a Postscript to the Fifth Volume of Stephens's "Mandibulata."* By the Rev. G. T. RUDD.

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—In a Postscript to his fifth volume of *Mandibulata*, Mr. Stephens adverts to a comparison which he fancies is made in your second volume, p. 516, “between the elaborate researches of Kirby and Gyllenhal,” and certain genera described in his Illustrations. From the sensitive manner in which he notices the remarks in the article he refers to, it is, I am sorry to say, too evident he considers them made in a spirit unfriendly to his work. I beg leave to disclaim any such feeling; but I assert my undoubted right of forming and expressing an opinion on the manner in which Mr. Stephens, or any other author, executes the task he undertakes for the instruction of those who may purchase or study his publication. In the article in question, I state, “whoever sits down to investigate and make out individuals of a genus, in which the described species are numerous, will soon discover the unsatisfactory progress he can attain, the uncertainty in which he remains, after the most careful study of his author, as to the specific types to which his several specimens are to be referred;” and in a note, “the genera *Harpalus*, *Amara*, *Cercyon*, *Aleochara*, &c. of the Illustrations,” are cited as cases in point. Without any hesitation, I repeat, that whoever sits down “to make out” a species of any one of the genera here enumerated, unless it be a very strongly marked one, will, after the most careful study of the “Illustrations,” remain uncertain as to what particular species it is to be referred; but that if the same person turn to Gyllenhal’s work, or to Kirby’s Mon. Ap. Ang., to ascertain an insect in the orders or family treated on

by them, he will rise satisfied that he has identified his species, or at least, that it is not described in their pages. Mr. Stephens says, I have been "regardless" of a note appended to the genus *Amara* in his Illustrations. I assure him I was fully aware of that note, which, as I understood, and do still understand it, has no reference to the difficulty of expressing with distinctness specific differences, but of ascertaining the number, and nomenclature, and location, of British insects generally, and of the species of *Amara* in particular.

The accuracy and precision of Gyllenhal's descriptions seem fully admitted by Mr. Stephens, though accounted for by the length of time that admirable author took to mature them.

In reference to Kirby's unequalled performance, Mr. Stephens says, "Although ALL his typical species may be ascertained according to the remarks in the paper referred to, it is stated by Mr. Shuckard, one of our best hymenopterologists, in Vol. III. p. 92, of the same publication, that he cannot ascertain above fifty species of *Andrena* and *Nomada* thereby." Now, "in the paper referred to," no such words as "all his typical species may be ascertained," nor any like them, as quoted by Mr. Stephens, occur!!!! From what motive Mr. Stephens has allowed himself to attribute to me words, and an assertion certainly not employed or made by me, is best known to himself. He has taken the trouble, too, of giving additional emphasis to the passage, by printing ALL in italics!!!!

My friend Mr. Shuckard's^a testimony is of the highest value; and if he distinctly (for I do not understand his remark in Vol. III., p. 92, exactly as Mr. Stephens interprets it,) affirms that, from want of precision in the specific characters given by Kirby, he is unable to ascertain above fifty species of *Andrena* and *Nomada*, then I will readily allow the Monog. Apum Angliae is much more imperfectly executed than entomologists generally imagine. Mr. Stephens, with the view, I

^a In June of last year, during a collecting excursion to Hampstead, where, by the way, I captured *Astata boops*, *Hedyahrus roseum*, *Methoca ichneumonides*, and several other reputed rare insects, Mr. Shuckard expressed his high admiration of Kirby's accuracy; and I well remember he said he was quite satisfied, that if any one possessed an insect described in the Monog. Ap. Angliae, he would be able to determine it most satisfactorily. See also Mr. Shuckard's high encomium of the Monog. Ap. Angliae, in his paper on the *Aculeate Hymenoptera*, published in the first part of the Transactions of the Entomological Society, for 1835.

suppose, of showing that "the comparison" was invidious, enters into a statement of the periods occupied by Kirby and Gyllenhal, in preparing their respective works. It seems our celebrated countryman "devoted two or three years of his undivided attention to the small group of 212 insects," and with a result so imperfect, that out of the 100 species of *Andrena* and *Nomada*, described by him, "one of the best hymenopterologists of the present time cannot ascertain above fifty species,—*i. e.* exactly one half. Now if such be the extreme difficulty of conveying, in definite and intelligible terms, the characters by which species may be distinguished, *inter se*, that two or three years of undivided attention to a small group of 212 insects, by even a Kirby, has failed; what prospect does Mr. Stephens offer to his subscribers, when he pledges himself to describe, during the next twenty months, the 4,800 species recorded in his Catalogue, and not yet given in the Illustrations; (when, too, he states explicitly in "the Postscript," he can only employ a few hours stolen from relaxation and repose each evening after the fatigues of the day,) to say nothing of the hosts of minute Hymenoptera not indicated even in the Catalogue, and the probable extensive additions that will be made to our *Fauna Insectorum* in the course of the current period!!! I think I do not overrate the number of British insects already known to exist, and still undescribed in the Illustrations, at 6,000, which will give 300 a month for the exercise of Mr. Stephens's descriptive powers!!!! If Kirby's Mon. Apum Angliæ, after all his care, tact, and time, and with its limited extent of subject, still leaves the entomologist unable to ascertain above 50 out of 100 *Andrena* and *Nomada*, I am afraid Mr. Stephens affords just ground for apprehension, that to describe 300 insects per month is a task more easily undertaken than well accomplished. However, "Nous verrons."

ART. XVII.—*Some Observations on the Structure and Functions of Tubular and Cellular Polypi, and of Ascidiae.* By JOSEPH JACKSON LISTER, Esq. F.R.S. (From the *Philosophical Transactions*, Part II. for 1834.)

THE science of Natural History is now advancing with a rapidity which, twenty years ago, her most enthusiastic

votaries, even in their wildest visions, could not have anticipated. The circulation of blood in insects, and also in torpid vertebrates; the metamorphosis of Crustacea, the mechanism of pulvilli, and the circularity of relation, are discoveries which, with many others, must mark the present as the brightest era that has hitherto dawned on Zoology. Among those whose active and powerful minds have contributed largely, though often secretly and anonymously, to the great mass of knowledge now possessed, the author of the paper before us stands conspicuous. Mr. Lister is one of that rare class of men who prefer obscurity to notoriety,—who are ever more willing to allow others the merit of their discoveries than to claim it for themselves,—who instantly communicate to an inquirer the brilliant result of years' research, making no reservation as to its appropriation. This is the spirit that we desire to see; we are certain that the true proprietor of scientific knowledge loses nothing by it. Often have we seen another parading, for a short time, in the borrowed plumage of philosophy, often christening some discovery with his own name; but the deceit is never successful: no one thinks of Americus as the discoverer of America.

The paper before us is one of extraordinary merit; whether we regard the remarkable nature of the facts, the perspicuous manner in which they are recorded, or the lasting influence which such a record must exercise over the whole science of Zoology, we do not hesitate in pronouncing it one of the most valuable the Philosophical Transactions have ever contained.

We suppress a short introductory essay which we had prepared, of the state of our knowledge of the *Acrita*, previous to the publication of Mr. Lister's paper, because we consider it our duty to devote all possible space to original communications; and we shall, therefore, content ourselves with referring the reader to the splendid work of Savigny,^a and confine ourselves to a simple notice of the essay before us.

Mr. Lister's first observation is on the *Tubularia indivisa*. When magnified about one hundred times, a current of particles was seen within the tube, resembling, in its steady continuous flow, the circulation observable in *Chara*.^b The

^a Mémoires sur les Animaux sans vertèbres, par Jules-César Savigny.—Partie Seconde. Paris, 1816.

^b A genus of plants.

particles were various in size; some very small, others apparently aggregations of smaller ones; some were globular, but most were without a regular form of any kind; they flowed at a uniform rate, in distinct currents, upwards and downwards, each current occupying half of the circumference. There were slight vortices in the current at certain nodous portions of the tube: no passage of particles was observed between the tube and the stomach. The action between the stomach and mouth was different from that in the tube. The mouth became swollen by a flow from the stomach, which continued about a minute; the contents of the mouth then returned to the stomach, which expanded,—the mouth at the same time contracting,—during which operation the connecting orifice was seen distinctly to open, and it continued so on the return of the flow to the mouth, till the stomach became nearly emptied; the orifice then gradually closed; and again re-opening, allowed the fluid to repass into the stomach: the intervals between each contraction of the orifice were very nearly eighty seconds.

The second observation is on *Sertularia pluma*; the specimen examined contained 400 to 500 polypi. "All the polypi were connected together by a soft granulated matter, which extended throughout the interior of the branches, stem, and root. With a power of 300,^c a current of particles, varying in size and form, was observed running along the axis of this soft matter. It flowed in one channel, alternately backwards and forwards, through the main stem and lateral branches of a plume, and through the root, as far as the opacity permitted its being traced: sometimes it was seen to continue into the cells. The stream was, throughout, in one direction at one time; it might be compared to the running of sand in an hour-glass, and was sometimes so rapid in mid-tide, that the particles were hardly distinguishable; but it became much slower when near the change. Sometimes it returned almost without a pause; but at other times it was quiet for awhile, as the particles took a confused whirling motion for a few seconds, the current afterwards appearing to set the stronger for this suspension. The whirling, or starting motion, took place sometimes at one, sometimes at another part of the stem and branches during the intervals of the currents. Five ebbs and

^c Observed also with a power of 100.

five flows occupied fifteen minutes and a half,—the same average time being spent in the ebb as in the flow. The longest continued stream was two minutes and a quarter; the longest suspension, half a minute. When the connexion of a plume with the root was interrupted by bending its stem, the stream running down the middle was observed to continue its flow up one of the lower and stronger lateral branches, and then to return down that branch, and up the main stem,—the course of the current in most of the other side branches being still the same as in the middle one. On a stem being cut off below the commencement of the side branches, a few seconds passed before any thing exuded from the stump. A small stream of particles then issued, followed by a flow of viscous matter; this stopped awhile, then went on again, but ceased altogether in about five minutes. It hung like honey about the end; and on its gradually clearing away, the wound appeared healed. The alternate currents in the axis of the soft matter were seen in all the *Sertulariæ* that were examined, and appear to be an essential character of this family."

Sertularia setacea. "From its transparency, and the smaller number of its moving particles, their individual quivering motions, and the course of its currents, were more conspicuous than in the former species. The stream sometimes extended only to the pulp below the septum, and sometimes mounted into the stomach; and in whichever part it terminated, agitation took place there on the ceasing of the upward flow. The soft part within the branches, which adhered generally to one side of the tube, had the look of a slimy matter, inclining to granular, and held together by greater tenacity at its outside. Nothing like muscular motion was seen in the pulp of this or any other species. As a little globular animalcule was driving rapidly past one of the expanded polypi, it instantaneously seized it, and brought it to its mouth by contracting its arms. They gradually opened again, except one, that remained awhile doubled with its end on the animalcule. The mouth, indistinctly, seemed filled with hairs or tentacula, that closed over the prey; and after a few seconds, it was carried slowly down, in the manner of the *Actiniæ*, the mouth contracting and the neck enlarging into the stomach: here it was uncertainly seen, and soon disappeared. Agitation of particles in the stomach followed the

swallowing, and then the currents between the stomach and the branch went on again as usual."

Mr. Lister concludes, from his various observations of the *Sertulariæ*, that the circulating fluid is the great agent in absorption, and that it performs a prominent part in the obscure processes of growth. In this we fully agree, as these properties are indisputably possessed by the blood of vertebrated animals; but its flowing into the stomach of the polypus seems altogether an anomalous fact, and exceedingly difficult to account for. Our author suggests whether this fact does not indicate that the circulating fluid is also a solvent of the food.

There are five plates accompanying this paper, engraved by Basire, from the author's drawings; and we wish to call the attention of naturalists to them, as perfect models of accuracy and neatness.

ART. XVIII.—*Notes on various Insects.* By JONICUS.

SIR,—As a military man, whose profession is his first, and entomology a second pursuit, I feel diffident in publishing any of my observations on this, to me, most fascinating branch of Natural History; believing from the present advanced state of the science, that such facts as a young and self-taught entomologist conceives new, may be merely details of well-authenticated truisms to his more experienced readers. Should you consider the following worth inserting amongst the varieties of your excellent publication, I trust they will make due allowance for my having regarded natural habits with deeper interest than scientific arrangement.

1. *Filaria*.—On the 18th of April last, finding to my surprise that a female specimen of *Zabrus gibbus*, which I had placed, with several other beetles, three hours before, in solution of spirits of wine, was not completely deprived of motion when taken out, I again submerged it in the spirits, and returned in about an hour. I then observed what appeared to be a black intestine protruding from the anus of the *Zabrus* about an inch; and on more closely examining it, observed that it was an animated worm. Gently extracting it, I freed the beetle from two of these parasites—the second white and

entwined with the end of the former black worm, which folded with it in a knot. The beetle was dead : the two worms lived for a few minutes, shrivelled up and died. Each was nearly five inches long, the black more firm in texture than the white, which I suppose had not arrived at maturity. It exactly resembled *Gordius Aquaticus*, and were it not for the acknowledged resemblance of some of the *Filaria* to the *Gordii*, I should feel inclined to believe it that *Annelide*. This happened at Fermoy, Ireland.

2. *Scarites lærigatus*.—“Niger : tibiis anticis tridentatis, posticè bidenticulatis : elytris oblongis, subdepressis, obsoletè striato-punctatis, punctisque duobus posticis impressis.”

Common in Cephalonia from the 18th of April to the 20th of August. Found on sandy beeches, where the sand shrimps dwell. The latter, as every person must have observed, burrow in the sand like a dog, forming a perpendicular hole. About the 20th of April, 1834, I watched one of the *Scarites* running on the sand, apparently in search of food. It ran into a shrimp hole, but finding it deserted, immediately came out and entered another : the shrimp happening to be near the top, sprung out when my friend was looking into his hole ; the *Scarites* however entered, but found nothing. At the next hole it was more fortunate, and I soon saw it return, dragging out its prey. On retiring behind some sea-weed to finish its meal, I captured it with the shrimp in its mouth. There is a smoother variety of this *Scarites*. The *S. pyracmon* is also found on the Lixurie coast.

I should observe that the Ionian Isles are particularly rich in various species of insects, many hitherto reckoned rare. In the course of eight months I captured in Cephalonia the following species of *Scaritides* :—

Scarites Pyracmon.—Two dead specimens found in the sands.

— *lærigatus*.—Common.

— Var. with former.

Siagona Oberleitneri.—Amongst the barren clay hills of Lixurie.

Ditomus robustus.—About sixteen specimens.

— *Calydonius*.—Not common.

— *Sphærocephalus*.—Not uncommon.

— *obscurus*.—Not uncommon.

In Corfu, during October and November, 1834, I captured the same *Siagona* and *Ditomi*, also *Clivina Fosso*.

The Rev. C. F. Kuper had captured several *Scarites* in Corfu; also specimens of *Ditomus Dama*, and a variety of *D. obscurus*, or distinct species. He may probably enlarge the list of known *Ditomi* hereafter.

3. *Eggs of Mantis Religiosa and Chalcis*.—During the winter of 1834, I observed in Cephalonia, on grass, the asphodel and other plants, particularly in marshes, brown ovoid masses, resembling the cocoons of small moths, and on examining them more closely, found that they were tough brownish white, composed of layers of scales placed with great regularity, and forming cells in series; the cells contained a yellowish liquid like the yolk of an egg. Having several specimens, I detected in one a minute white grub in some of its cells: this was in December, 1833. On the 17th of May, happening to look at one which lay in my desk, I observed four or five minute *Chalcidæ* settled in it, and upon opening it to discover whether they were the real occupants or intruders, I discovered several emerging, or perfectly formed. They are minute, about two lines in length, not including the ovipositor: black, with part of the body and the feet reddish; hinder legs variegated, and thighs thickly incrassated; eyes red; antennæ clavate; oviduct exserted, and twice the length of the body. It appeared to make fully as much use of its hind legs as of its wings, leaping to a considerable distance. In some specimens the oviduct was four times the length of body and recurved. On the 24th of May I found several young *Mantes* in the desk; and removing them, I placed one of the excrescences under a tumbler where it would not be disturbed, and in a few days several young *Mantes oratoria* made their appearance, which removed all doubts as to the excrescence not being a mass of eggs. The young *Mantes* devoured each other, and the number diminishing, I let them out.

ART. XIX.—*Notes on Diptera.* By FRANCIS WALKER.

PLANETES. N. G. *Cecidomyia proximum*. Fem. *Antennæ 12-articulatæ, corporis dimidii longitudine; articuli longi, æquales, quasi bipartiti, basi rotundi, apice ovati;*

12^{us}. conicus, acuminatus : thorax trans caput longe productus : pedes crassi ; tarsi incurvi, articulo basali brevissimo. P. extremus. Fem. Obscure ferrugineus, parce hirtus : thoracis et abdominis latera pallida : antennæ fuscæ : pedes nigro-fusci : alæ fuscæ, breves, pubescentes. (Corp. long. lin. 1½; alar. lin. 2½.) Found near London.

Cecidomyia producta, Meigen. Found near London.

Erioptera pygmæa, Macquart. Inhabits woods near London in May.

Limnophila, Macquart. Separated from *Limnobia*, Meigen, and comprising *L. punctata*, Meigen, and other species, that have five posterior cells to each wing.

Limnobia occulta, Meigen. Frequents the verdant banks of mountain rivulets in North Wales, and the vicinity of the lakes of Westmoreland and Cumberland during the autumn. The species of insects, as well as the soil and climate of the above-mentioned countries, are nearly alike.

Cylindrotoma, Macquart. Founded upon *Limnobia distinctissima*, Meigen. Taken at New Lanark, Scotland.

Tipula dispar, Haliday. Rare near London, but very common in North Wales from September to November. The short wings of the female, like those of many winter moths, are useless for flight, and it crawls over heath and furze bushes.

Pachyrhina, Macquart. A genus answering to Meigen's second division of *Tipula*, and comprising *T. crocata, pratensis, imperialis*, &c.

Ptychoptera lacustris, Meigen. Found at New Lanark. It has darker and more slender legs than *P. contaminata*.

Dictenidia and *Xiphura*, Brullé. These two genera were separated from *Ctenophora*, by Brullé. The type of the former is *C. bimaculata*; of the latter, *C. atrata*; while *C. pectinicornis* is left with that genus. *Ptychoptera* is allied to *Dictenidia* and *Ptych. pectinata*, Macquart connects them.

Hexatoma nigra, Latreille. Found at New Lanark, Scotland.

Bolitophila maculipennis. B. fusca major ; alæ maculis duabus fuscis, una disco, altera ad nervi subcostalis apicem. (Corp. long. lin. 3½; alar. lin. 6.) Found but very rarely near London in the spring; and in the autumn, near Ambleside, in Westmoreland.

B. fusca, Meigen. Found in hedges, woods, &c. during the spring, autumn, and winter, in various parts of England.

Orphnephila devia, Haliday. September, North Wales; frequents moist shady spots.

Lestremia, Macquart. This genus has more affinity to *Molobrus* than to *Cecidomyia*. The antennæ resemble those of *Zygoneuva*, which is still nearer allied to *Molobrus*.

Chrysomyia, Macquart. Answering to Meigen's second division of *Sargus*, and comprising *S. formosus*, *S. politus*, &c.

Atherix melæna, Hoffmansegg. May, in woods near London. The male probably belongs to the genus *Spania*, Meigen. The disposition of the nervures of the wings varies very much.

Atherix immaculata, Fabricius. Found near London in June.

Tachypezu arenaria, Haliday. Inhabits sea-weed and rocks on the coasts of South Devonshire, Cornwall, and the Isle of Wight, during the summer and autumn. Var. ? $\beta.$ *alata*. *Alæ amplæ, subfuscæ ad costam obscuriores*. September, South Devonshire and Cornwall.

T. graminum, Fallen. September, in the Isle of Wight, near Alum-bay.

T. prælusio. *Griseo-fusca, oculi obscuriores, pedes pallidiores, alæ angustæ brevissimæ sublimpidæ*. (Long. lin. $\frac{1}{2}$.) Dull, pale, half the size of *T. graminum*; body longer and more slender, antennæ very short, abdomen thrice the length of the thorax, looks like a little *Molobrus*, runs fast, but has not the activity of the preceding species. September, on plants in a thick wood, near the Devil's-bridge, North Wales.

T.? *hirta*. *Nigra, obscura, parce hirta*, *T. arenaria triplo major, oculi et halteres obscure rufi, pulvilli flavi; alæ subfuscæ amplæ, nervi nigri*. (Corp. long. lin. $1\frac{1}{2}$; alar. lin. $2\frac{1}{2}$.) June, on sea-weed in the Isle of Wight.

Drapetis, Megerle; 1 *aterrima*, Haliday; 2 *fusipes*, Macquart; 3 *nigra*, Meigen; 4 *exilis*, Megerle; 5 *flavipes*, Macquart. All these inhabit Britain, but probably are not all distinct species, for their size and the colour of their legs and wings vary very much; they run with extraordinary swiftness. *D. nigra* and *D. exilis* may be found near London from May to October, among grass, and beneath planks placed on decayed vegetable matter, &c. When in these situations

they are not easily recognized among the endless numbers of *Borborites*, which they resemble in form and habit. Like them also they are infested by *Acari*, often so much so as to appear like moving heaps of those animals, the *Drapetis* being concealed from the sight, and scarcely able to run. I have seen them also in North Wales. *D. flavipes* inhabits the same localities near London, and in the New Forest, Hampshire, but is much rarer. *D. fuscipes* lives on the coasts of Wales, Devonshire, and Cornwall.

Argyra, Macquart. Founded upon *Porphyrops diaphanus*, *argyrius*, and the other species belonging to Meigen's first division of that genus.

Medeterus conspersus, Haliday. September, in swampy spots on mountains in Westmoreland, Cumberland, and North Wales, particularly abundant on the summit of Plynlimmon.

M. alpinus, Haliday. With the preceding, but much rarer.

Machærium maritimum, Haliday. June, on the sea-coast, near Lymington, Hampshire.

Platypeza picta, Meigen. The largest and handsomest British species of *Platypeza*, and has most development of the character whence the generic name is derived. Found near London in the spring.

P. dorsalis, Meigen. August, on grass beneath the trees near London. The little nervure, which unites the two last longitudinal nervures, at the lower base of the wing of this species is curved and short, in the others it is long and straight.

P. atra, Meigen, and *P. holosericea*, Meigen. August, on grass beneath trees near London.

P. fumipennis. Mas. *Aterrima*, *holosericea*, *halteres et pedes picei*, *metatarsi vix incrassati*, *alæ fulvofumosæ*, *nervus 5^{us}*. *longitudinalis marginem attingens*, *nervus transversus ordinarius margini proximus*. (Corp. long. lin. 2; alar. lin. 4.) August, on grass beneath trees near London.

P. aterrima. Mas. *Aterrima*, *holosericea*, *halteres et pedes atri*, *metatarsi valde incrassati*, *alæ fumosæ*, *nervus 5^{us}*. *longitudinalis abbreviatus*, *nervus transversus ordinarius margini proximus*. (Corp. long. lin. 1 $\frac{3}{4}$; alar. lin. 3 $\frac{1}{2}$.) July; on grass beneath trees near London.

Callomyia elegans, Fabricius, *C. speciosa*, Meigen, *C. antennata*, Fallen. Found in summer on grass beneath trees near London.

Trixa ——. September, North Wales. The same species as that which Dr. Leach sent to Meigen, and which the latter described as a variety of *T. variegata*, but observed that it might be distinct.

Themira pilosa, Ent. Mag. Vol. I. p. 254. For *Themira pilosa*, read *Themira superba*, Haliday, (*Sepsis-idem*, E. M. I. 170.) and transfer the reference to *Themira putris*. I am indebted to Mr. Haliday for the correction of this error.

Psila rufa, Hoffmannsegg. September; on heath near Llangollen, North Wales.

P. pallida, Fallen. Found near New Lanark, Scotland.

Diastata obscurella, Meigen. Frequents the dampest and most shady woods. Found during the summer and autumn in Hampshire, Devonshire, and North Wales.

Phora abdominalis, Fallen. October; on larches, North Wales.

ART. XX. — *Monographia Chalciditum.* By FRANCIS WALKER.

(Continued from page 97.)

— “the green myriads in the peopled grass.”

Sp. 68. Pter. junceus. Fem. *Viridis, abdominis discus purpureo-cupreus, pedes flavi, antennæ et femora nigra, alæ limpidæ.*

Obscure viridis: oculi ocellique rufi: antennæ nigræ; articulus 1^{us}. basi fulvus: abdomen pupureo-cupreum, basi apice subtus et utrinque viride: pedes læte flavi; coxæ virides; trochanteres fusti; femora nigra, apice flava; meso- et metatarsi apice fusti; protibiae et protarsi sordide fulva: alæ limpidæ; squamulæ et nervi flava, illæ apice fuscæ; stigma minutum. (Corp. long. lin. 1; alar. lin. 1 $\frac{1}{2}$.)

Found near London.

SECTIO VIII.—Fem.

Corpus longum, angustum: caput thorace paullo latius: antennæ filiformes, corporis dimidio non longiores; articuli 5°. ad 10^{um}.

curtantes; clava fusiformis, articulo 10°. fere duplo longior: thorax longi-ovatus: prothorax brevissimus: mesothoracis parapsides vix conspicuae: metathorax brevis: abdomen fusiforme, acuminatum, thorace multo longius, supra planum, subtus angulatum, non compressum; segmenta subæqualia: oviductus abdomine occultus: alæ amplæ.

Sp. 69. Pter. filicornis. Fem. *Viridis, abdomen aureo-viride, antennæ nigræ, pedes fulvo-flavi, alæ limpidæ.*

Læte viridis: oculi ocellique rufi: antennæ nigræ, graciles; articulus 1^{us}. fulvus, apice niger: abdomen aureo-viride; segmentum 1^{um}. cupreomicans, sequentia apice cuprea: pedes læte fulvi; coxæ virides; meso- et metapedum tibiæ et tarsi læte flava, hi apice fusi: alæ limpidæ; squamulæ et nervi fulva, illæ apice nigræ; stigma fuscum, parvum. (Corp. long. lin 1½; alar. lin. 2½.)

Found near London.

SECTIO IX.—Fem.

Corpus longum, angustum, subtilissime squameum, fere glabrum: caput thoracis latitudine: mandibulæ quadratae, subarcuatæ, similes, dentibus 4 minutis armatae; dens 1^{us}. acutus; 2^{us}. brevior et obtusior; 3^{us}. multo minor; 4^{us}. brevis, latus, obtusus; maxillæ longæ, subarcuatæ; laciniae angustæ, acuminatae, intus lobatae; palpi 4-articulati, graciles, filiformes, articulus 1^{us}. mediocris, 2^{us}. paullo longior, 3^{us}. 1^l. longitudine; 4^{us}. longi-fusiformis, acuminatus, 2°. plus duplo longior: labium longum, angustum, subfusiforme; apex s. palpiger apice furcatus; ligula brevis, lata, ciliata; palpi 3-articulati, extrorsum crassiores, ligula vix longiores; articulus 1^{us}. mediocris; 2^{us}. brevissimus; 3^{us}. longi-ovatus, 1°. longior et crassior: antennæ graciles, extrorsum crassiores, corporis dimidio vix longiores; articuli 5°. ad 10^{um}. longitudine decrescentes sensimque crassiores; clava linearis, acuminata, articulo 10°. plus duplo longior vix latior: thorax longi-ovatus, parum-convexus: prothorax brevissimus: mesothoracis scuto parapsides-fere in unum confusæ: metathorax bene determinatus, medio sulcatus: abdomen longi-ovatum, acuminatum, fere læve, thorace paullo longius, supra planum, subtus carinatum, non compressum nec angulatum; segmentum 1^{um}. longum; 2^{um}. 3^{um}. et 4^{um}. brevia; 5^{um}. 6^{um}. et 7^{um}. paullo longiora: oviductus abdomine omnino occultus: alæ amplæ; nervus cubitalis radiali brevior.

Sp. 70. Pter. muscarum. Fem. *Viridis*, *aeneo cupreο et cyaneο variο*, *antennae nigræ*, *pedes flavi*, *alæ limpidæ*.

Ichneumon muscarum . . . *Linn. Syst. Nat.* II. 938. 62 ;
Faun. Suec. 1636; *Gmel. Syst. Nat.* V. 2713. 62; *Deg. Ins.* I. 604—608; tab. 32. fig. 17—21; *Fabr. Sp. Ins.* I. 438. 109; *Mant. Ins.* I. 270. 130; *Syst. Ent.* 342. 84; *Ent. Syst.* II. 185. 214; *Müll. Faun. Fridr.* 621; *Vill. Ent. Linn.* III. 205. 230.

Cleptes muscarum . . . *Fabr. Syst. Piezat.* 156. 7.

Cynips viridis nitens, &c. . . *Geoff. Ins.* II. 308. 31.

Lætissime viridis, nitens : maxillæ et labium viridia; laciniae, palpi maxillares et ligula flava; palpi labiales pallide fusci: oculi ocellique rufi: antennæ nigræ; articulus 1^{us}. fulvus, apice niger: mesothoracis postscutellum viridi-aeneum: abdominis discus purpureus; segmentum 1^{um}. cupreο varium, 6^{um}. et 7^{um}. aeneo-viridia: pedes læte flavi; coxae virides; femora extus fulvo vittata; meso- et metatarsi apice fusci: alæ limpidissimæ; squamulæ et nervi flava, illæ apice nigræ; stigma fulvum, minutum. (Corp. long. lin. 1—1½; alar. lin. 1½—2½.)

Var. β.—Caput supra thoracisque suturæ aeneo-viridia: abdomen viridi-cupreum, fasciis 4 medio connexis purpureis; segmentum 1^{um}. viride, cupreο maculatum.

Var. γ.—Abdominis segmenta basi utrinque et subtus læte cuprea.

Var. δ.—Thorax cupreο-viridis.

Var. ε.—Abdomen cupreum; discus purpureus; segmenta apice viridia.

Var. ζ.—Antennis articulus 1^{us}. fuscus, basi fulvus, apice niger: abdominis segmenta cupreο varia; 1^{um}. cupreum, apice viride.

Var. η.—Abdomen læte viride; discus purpureus.

Var. θ., *Var. η.*, similis: antennæ articulo 1^o. supra fusco: profemora extus fusca.

Var. ι.—Abdominis segmentum 1^{um} cyaneum.

Var. κ.—Thorax supra cyaneο-viridis.

Var. λ.—Viridi-cyaneus: antennis articulus 1^{us}. fuscus, basi fulvus, apice niger: abdominis discus purpureus: profemora extus fusca.

Var. μ.—Caput et thorax æneo-viridia: abdomen cupreo-varium.

Var. ν.—Antennæ articulo 1^o. flavo, apice fuscō.

Var. ξ. *Var. μ.* similis: antennæ articulo 1^o. fusco, apice nigro: abdomen viride; discus cupreus.

Var. ο.—Antennæ nigro-fuscæ: proalæ subfulvæ.

Common on windows, &c. in most parts of Britain, throughout the year. Taken at Paris by the Comte de Castelneau.

SECTIO X.—Fem.

Caput thorace paullo latius: antennæ mediocres, subclavatæ, corporis dimidio breviores; articuli 5^o. ad 10^{um}. curtantes et latescentes; clava longi-ovata, articulo 10^o. duplo longior et manifeste latior: thorax ovatus, convexus: prothorax brevisimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen acuminatum, thorace longius, subtus carinatum, non compressum nec angulatum; segmentum 1^{um}. magnum; reliqua breviora; 2^{um}. et sequentia ad 6^{um}. longitudine crescentia: oviductus occultus: alæ mediocres; nervus humeralis ulnari duplo longior; cubitalis radiali brevior; stigma ramulum brevem emittens.

*ABDOMEN LONGI-OVATUM.

Sp. 71. Pter. basalis. Fem. *Æneo-viridis, abdomen cupreo-purpureum basi viride, antennæ fuscæ, pedes flavi, femora viridia, alæ limpidæ.*

Æneo-viridis, parum nitens: caput viride: oculi ocellique rufi: antennæ fuscæ, apice et subtus pallidiores; articulus 1^{us}. fulvus, apice obscurior: abdomen cupreo-purpureum, nitens, thorace multo longius vix angustius, paullo attenuatum; segmentum 1^{um}. læte viride; sequentia basi viridia: pedes læte flavi; coxæ et femora viridia, hæ apice flava; metatibiæ fulvo cingulatæ; meso- et metatarsi pallidi, apice fuscæ: alæ limpidæ; squamulæ et nervi flava, illæ apice fuscæ; stigma fulvum, parvum. (Corp. long. lin. 1 $\frac{1}{3}$; alar. lin. 1 $\frac{3}{4}$.)

September; Isle of Wight.

Sp. 72. Pter. decisus. Fem. *Viridi-æneus, abdominis discus purpureus, antennæ fuscæ, pedes rufi, alæ sublimpidæ.*

Viridi-æneus, parum nitens: caput antice viride: oculi ocellique rufi: antennæ fuscæ, corporis dimidio vix longiores; articulus

1^{us}. fulvus, apice fuscus : thoracis segmentorum suturæ cyano-virides : abdomen æneo-viride, nitens ; discus purpureus ; segmentum 1^{um}. cupreo varium : pedes rufi ; coxæ virides ; genua, meso- et metatarsi flava, hi apice fusi : alæ griseolimpidae ; squamulæ fulvæ, apice fuscæ ; nervi fusi, basi fulvi ; stigma obscurius, parvum. (Corp. long. lin. 1 $\frac{1}{3}$; alar. lin. 1 $\frac{1}{4}$.)

Found near London.

** ABDOMEN OVATUM.

Sp. 73. Pter. laetus. Fem. *Æneo-viridis, abdomen nigro-cupreum, antennæ fulvofuscæ, pedes flavi, femora viridia, tibiæ fulvo cingulatæ, alæ fuscæ.*

Æneo-viridis, brevis, latus : caput viride : oculi ocellique rufi : antennæ fulvofuscæ ; articuli 1^o. ad 4^{um}. pallide fulvi : abdomen nigro-cupreum ; segmentum 1^{um}. splendide cùpreum : pedes flavi ; coxæ et femora viridia, hæ apice flava ; meso- et metatarsi fulvo cingulatæ ; tarsi apice fusi : alæ fulvo-fuscæ, basi fere limpidae ; squamulæ et nervi fulva, illæ apice fuscæ ; stigma fuscum, mediocre. (Corp. long. lin. $\frac{4}{5}$ —1 ; alar. lin. 1 $\frac{1}{3}$ —1 $\frac{1}{2}$.)

Var. β.—Thorax viridis.

Found near London.

Sp. 74. Pter. infectus. Fem. *Viridi-æneus, abdomen cupreo-purpureum, antennæ fuscæ, pedes fulvi, femora viridia, tibiæ fusco-cingulatæ, alæ limpidae.*

Æneus, parum nitens : caput æneo-viride : oculi ocellique rufi : antennæ obscure fuscæ ; articulus 1^{us}. fulvus, apice fuscus : abdomen cupreo-purpureum ; segmentum 1^{um}. læte viride, cupreo varium ; sequentia basi utrinque viridia : pedes flavi ; coxæ et femora viridia, hæ apice fulva ; meso- et metapedum tibiæ fusco-cingulatæ ; tarsi apice fusi : alæ limpidae ; squamulæ et nervi fulva, illæ apice fuscæ ; stigma obscurius parvum ; nervus cubitalis radiali vix brévier. (Corp. long. lin. $\frac{5}{4}$ —1 $\frac{1}{2}$; alar. lin. 1 $\frac{1}{2}$ —1 $\frac{3}{4}$.)

Var. β.—Viridi-æneus : caput viride : abdomen viride ; discus cupreo-purpureus ; segmentum 1^{um}. basi cupreo-varium.

Var. γ.—Abdomen purpureum, utrinque cupreo-æneum ; segmentum 1^{um}. æneo-viride, cupreo-varium.

Var. δ. *Var. β.* similis: caput viridi-æneum: thorax cupreo-æneus: protibiae fusco cingulatae.

Var. ε.—Antennæ articulo 1^o. omnino fulvo.

Var. ζ. *Var. β.* similis: thorax viridis.

September; near London; Isle of Wight.

Sp. 75. Pter. placidus. Fem. *Viridi-æneus, abdominis discus purpureus, antennæ nigro-fuscæ, pedes fulvi, femora viridi fusca, tibiæ fusco-cingulatae, alæ limpidæ.*

Æneus, parum nitens: caput viride: oculi ocellique rufi: antennæ nigro-fuscæ; articulus 1^{us}. basi et subtus fulvus: abdomen viridi-æneum; discus purpureus; segmentum 1^{um}. viride, cupreo varium: pedes fulvi; coxae virides; femora viridi-fusca; meso- et metapedum tibiæ fusco cingulatae, apice flavæ; tarsi flavi, apice fusi: alæ limpidæ; squamulae et nervi flava, illæ apice fuscæ; stigma fulvum, parvum. (Corp. long. lin. 1½—1½; alar. lin. 1¾—2.)

Var. β.—Abdominis segmentum 1^{um}. viridi-æneum, cupreo varium: profemora extus fusco vittata.

Var. γ. *Var. β.* similis: caput æneo-viride: scutellum cupreo-æneum.

New Lanark, Scotland. September; Isle of Wight.

Sp. 76. Pter. impeditus. Fem. P. placido *simillimus, antennæ breviores.*

Æneus, parum nitens: caput æneo-viride: oculi ocellique rufi: antennæ fuscæ; articulus 1^{us}. basi et subtus fulvus: abdomen æneo-viride; discus purpureus; segmentum 1^{um}. cupreo varium: pedes flavi; coxae virides; femora viridi-fusca, apice flava; tibiæ fusco cingulatae; tarsi apice fusi; protarsi fulvi: alæ limpidæ; squamulae et nervi flava, illæ apice fuscæ; stigma fuscum, parvum. (Corp. long. lin. ¾—1½; alar. lin. 1¼—1¾.)

Var. β.—Stigma pallide fulvum.

September; Isle of Wight.

Sp. 77. Pter. ovatus. Mas. et Fem. P. impedito *simillimus at brevior.*

Mas.—Viridis: os fulvum: oculi ocellique rufi: antennæ fulvæ, extrorsum crassiores; articulus 1^{us}. obscure fuscus, basi fulvus; 5^{us}. et sequentes ad 10^{um}. curtantes; clava articulo 10^o. paullo

latior et plus duplo longior: abdomen thorace vix longius, basi cyaneo-viride; discus cupreus; sexualia fulva, exerta: pedes flavi; coxae et femora viridia, hæ apice flava; tarsi apice fusi; protarsi fulvi: alæ limpidæ; squamulæ et nervi flava, illæ apice fuscae; stigma pallide fulvum, parvum.

Fem..—Æneo-viridis: caput viride; antennæ obscure fuscae; articulus 1^{us}. basi et subtus fulvus: abdomen æneo-viride; discus purpureus; segmentum 1^{um}. cupreo varium: stigma flavum. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β. Fem.—Viridis: abdominis discus purpureus.

Var. γ. Fem.—Caput et thorax viridi-aenea.

Var. δ. Fem. Var. β. similis: meso- et metatibie fusco cingulatae: stigma fulvum.

Var. ε Fem. Var. δ. similis: antennæ pallide fuscae.

September; Isle of Wight.

SECTIO XI.—Fem.

Corpus angustum: caput thorace latius: antennæ clavatae, latae, corporis dimidio multo breviores; articuli 5°. ad 10^{um}. latitudine crescentes longitudine subæquales; clava longi-ovata, articulo 10°. duplo longior et manifeste latior: thorax longi-ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax bene determinatus: abdomen longi-ovatum, thoracis longitudine et latitudine, subtus carinatum, non angulatum nec compressum; segmentum 1^{um}. magnum: sequentia breviora: oviductus occultus: alæ angustæ; nervus cubitalis radiali multo brevior.

Sp. 78. Pter. contractus. Fem. *Viridis, abdominis discus purpureus, antennæ fuscae, pedes flavi, alæ sublimpidæ.*

Viridis, nitens: oculi ocellique rufi: antennæ pallide fuscae; articulus 1^{us}. fulvus: mesothoracis scutellum et abdomen æneo-viridia, hujus discus purpureus, segmentum 1^{um}. cupreo varium: pedes læte flavi; coxae virides; meso- et metatarsi pallidi, apice fusi: alæ sublimpidæ; squamulæ et nervi pallide flava, illæ apice fuscae; stigma minutum. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{1}{2}$.)

Found near London.

Sp. 79. Pter. linearis. Fem. *Viridis*, *abdomen cupreopurpureum segmentis basi viridibus, antennæ fuscæ, pedes fulvi, femora viridia, alæ limpidae*.

Viridis; oculi ocellique obscure rufi: antennæ obscure fuscæ; articulus 1^{us}. fulvus, apice obscurior: abdomen cupreopurpureum; segmentum 1^{um}. lète viride, apice purpureum; sequentia basi viridia: pedes fulvi; coxæ et femora viridia, hæ apice fulva; meso- et metatarsi flavi, apice fusi: alæ limpidae; squamulæ et nervi flava; illæ apice fuscæ; stigma fulvum, parvum. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$)

September; near London. Isle of Wight.

Sp. 80. Pter. formosus. Fem. *Cyaneo-viridis, abdominis discus cupreus, antennæ fuscæ, pedes flavi, femora viridi-fusca, alæ limpidae*.

Cyaneo-viridis, nitens: caput supra et antice viride: oculi ocellique rufi: antennæ fuscæ; articulus 1^{us}. fulvus: mesothoracis scutum cupreo-varium: abdominis discus cupreus: pedes lætissime flavi; coxæ cyaneo-virides; femora viridi-fusca, apice flava; tarsi apice fusi; protarsi pallide fulvi: alæ limpiddissimæ; squamulæ flavæ, apice fuscæ; nervi fulvi, stigma minutum. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{3}$; alar. $1\frac{1}{2}$ — $1\frac{3}{4}$.)

Found near London.

SECTIO XII.—Fem.

Corpus angustum, sublineare: caput thorace multo latius: mandibulæ parvæ, quadratae, subarcuatae, dentibus 4 brevissimis armatae: maxillæ longæ, subarcuatae; laciniae angustæ, acuminatæ, intus lobatae; palpi 4-articulati, filiformes graciles; articuli 1^{us}. et 3^{us}. subæquales; 2^{us}. paullo longior; 4^{us}. longifusiformis, 3°. fere duplo longior, apice acuminatus pilosus: labium breve, obconicum; palpiger furcatus; ligula brevis, lata, ciliata; palpi 3-articulati, crassi, ligula vix longiores; articulus 1^{us}. subcyathiformis; 2^{us}. brevissimus; 3^{us}. fusiformis, acuminatus, 1°. multo longior: antennæ extrorsum crassiores, corporis dimidio breviores; articuli 5°. ad 10^{um}. longi, subæquales; clava valde acuminata, articulo 10°. duplicato longior: thorax longiovatus: prothorax brevissimus: mesothoracis parapsides scuto in unum confusæ: metathorax brevis: abdomen longi-ovatum, valde depresso, thorace paullo longius et latius; segmenta

subæqualia : oviductus occultus : alæ angustæ ; nervus cubitalis radiali multo brevior.

Sp. 81. Pter. fulviventris. Fem. *Viridi-cyaneus*, *abdomen fulvum, antennæ flavæ, fusco cingulatæ, pedes flavi, alæ limpidæ.*

Viridi-cyaneus, parum nitens : oculi ocellique rufi : antennæ fuscæ ; articuli 1^{us}. et 2^{us}. virides ; 3^{us}. et sequentes ad 6^{um}. flavi ; clava flava : abdomen fulvum : pedes flavi ; coxæ et femora basi viridia ; meso- et metatarsi apice fusti : alæ limpidæ ; squamulæ et nervi flava ; stigma minutum. (Corp. long. lin. 1 $\frac{1}{6}$; alar. 1 $\frac{1}{4}$.)

September ; Isle of Wight.

SECTIO XIII.—Mas et Fem.

Mas. — Corpus longum, sublineare : caput thorace vix latius : antennæ filiformes, corporis dimidio longiores ; articuli 5°. ad 10^{um}. longitudine decrescentes ; clava quasi compressa, apice acuminata, articulo 10°. angustior et plus duplo longior : thorax longi-ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ conspicuæ : metathorax mediocris : abdomen sublineare, thorace paullo brevius : alæ angustæ ; nervus cubitalis radiali multo brevior.

Fem. — Corpus quam *mari* latius : antennæ extrosum crassiores, corporis dimidio paullo breviores ; clava valde acuminata, articulo 10°. plus duplo longior non latior : thorax ovatus : abdomen ovatum, thorace paullo latius non longius, subtus angulatum, non compressum ; segmentum 1^{um}. magnum ; sequentia breviora, subæqualia : oviductus occultus.

Sp. 82. Pter. tricolor. Mas et Fem. *Cyaneo-viridis*, *abdomen plerunque purpureum aut cupreum, antennæ mari nigrae, fem. fuscæ apice flavæ, pedes fulvo-fusci, femora viridia, alæ subgriseæ fusco sæpe maculatæ.*

Mas. — *Cyaneo-viridis* : oculi ocellique rufi : antennæ nigrae ; articulus 1^{us}. rufus ; 2^{us}. viridis : abdomen obscure purpureum, nitens, apice et subtus pilis albis parce hirtum ; segmentum 1^{um}. basi fere ad apicem læte viride : pedes fusci ; coxæ et femora viridia ; genua, tibiæ apice et tarsi flava, hi apice fulvi ; protibiæ et protarsi fulva : alæ subgriseæ ; proalæ sub stigma obsolete fuscæ ; squamulæ et nervi fusca, illæ antice virides ; stigma mediocre ; metalarum nervi pallide flavi.

Fem. — *Viridis*: antennæ obscure fuscæ; articulus 1^{us}. fulvus, apice fuscus; clava flava: abdominis segmentum 1^{um}. lète cupreum: tarsi apice fusi: proalæ sub stigma obscure fuscæ; stigma concolor. (Corp. long. lin. 1—1 $\frac{2}{3}$; alar. lin. 1 $\frac{1}{4}$ —2 $\frac{1}{3}$.)

Var. β. Fem. — *Cyaneo-viridis*: antennæ articulo 1^o. pallide fulvo, subtus et basi flavo: abdominis segmentum 1^{um}. viridi varium; sequentia nigro-cuprea: femora fusca, tibiæ pallide fuscæ.

Var. γ. Fem. Var. β. similis: antennæ pallide fuscæ: tibiæ fulvæ, apice flavæ.

Var. δ. Fem. Var. β. similis: antennæ apice fulvæ.

Var. ε. Fem. Var. β. similis: abdominis segmentum 1^{um}. viride.

Var. ζ. Fem. Var. β. similis: abdominis segmentum 1^{um}. cupreum.

Var. η. Fem. Var. β. similis: alarum maculæ vix conspicuæ.

Found by the Rev. G. T. Rudd, near Darlington. September; near the sea-shore; Isle of Wight, Dorsetshire, South Devonshire.

SECTIO XIV.—Fem.

Corpus mediocre: caput thorace paullo latius: antennæ clavatae, crassæ, corporis dimidio longiores; articuli 5^o. ad 10^{um}. longitudine decrescentes latitudine increscentes; clava articulo 10^o. paullo latior vix duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, subtus angulatum, apice elevatum acuminatum, non compressum, thorace paullo longius et latius; segmentum 1^{um}. magnum; sequentia breviora: oviductus occultus: alæ mediocres; nervus cubitalis radiali vix brevior.

Sp. 83. *Pter. maculipennis*. Fem. *Viridis*, *abdomen cupreum*, *antennæ nigræ*, *pedes flavi*, *femora fusca*, *proalæ fusco maculatæ*.

Viridis, parum nitens: oculi ocellique rufi: antennæ nigræ; articulus 1^{us}. flavus; 2^{us}. 3^{us}. et 4^{us}. fusi: abdomen cupreum; segmentum 1^{um}. lète cupreo-aeneum: oviductus rufus: pedes flavi; coxae virides; femora fusca; meso- et metatarsi pallide flavi, apice fusi: alæ sublimpidæ; proalæ sub nervis ulnari et cubitali fusco-maculatæ; squamulæ fuscae; nervi fulvi; stigma minutum. (Corp. long. lin. 1—1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$.)

Var. β. — Abdomen purpureo-cupreum; segmentum 1^{um}. lacte cupreo-viride: femora flava.

Var. γ. *Var. β* similis: caput et thorax viridi-aenea.

July, August; grass in fields; near London.

SECTIO XV.—Fem.

Corpus breve, latum: caput magnum, thorace latius: antennæ clavatae, compactæ, corporis dimidio breviores; articuli 5^o. ad 10^{um}. latitudine incrementales longitudine decrescentes; clava articulo 10^o. latior et duplo longior: thorax brevi-ovatus: prothorax brevissimus: mesothoracis parapsides scuto in unum confusæ: metathorax mediocris: abdomen brevi-ovatum, thoracis longitudine et latitudine, supra planum, subtus convexum angulatum, apice abrupte angustius elevatum acutum; segmentum 1^{um}. ejus dimidium occupans; sequentia brevissima; 6^{um}. et 7^{um}. paullo longiora: oviductus occultus: alæ mediocres; nervus cubitalis radiali multo brevior.

Sp. 84. Pter. rufiventris. Fem. *Æneo-viridis, antennæ fuscae, abdomen plerunque rufum, pedes flavi, alæ sape fusco variae.*

Æneo-viridis, parum nitens: caput viride: oculi ocellique rufi: antennæ fuscae; articuli 1^o. ad 4^{um}. fulvi: mesothoracis scutellum aeneum: abdomen rufum, medio ad apicem viridi-cupreum; segmentum 1^{um}. basi utrinque viridi maculatum: pedes flavi; coxae virides; tarsi apice fusi: proalæ sublimpidæ, in eujusque disco maculae 2 fuscae, una sub nervo ulnari, altera ad apicem propior minor vix conspicua; squamulæ et nervi fulva, illæ apice fuscae; stigma minutum; metalæ limpidæ, nervi flavi. (Corp. long. lin. 1½—1¾; alar. 1⅓—1½.)

Var. β. — Thorax viridis: metafemora supra fusca: alarum maculæ vix conspicuae.

June and October; on laurels; near London.

Sp. 85. Pter. transiens. Fem. *Viridi-aeneus, abdomen basi subfulvum, antennæ nigræ, pedes flavi, alæ limpidæ.*

Viridi-aeneus, parum nitens: caput viride: oculi ocellique obscure rufi: antennæ nigræ; articuli 1^{us}. et 2^{us}. fulvi: metathorax viridis: abdomen viride, basi viridi-fulvum micanus; discus obscure cupreus; pedes flavi; coxae virides; tarsi pallide flavi, apice

fusci; protarsi obscuriores: proalæ sublimpidæ; squamulæ et nervi fulva, illæ apice fuscæ; stigma fuscum, parvum; metalæ limpidae, nervi flavi. (Corp. long. lin. 1; alar. lin. 1 $\frac{1}{4}$.)

Found near London.

SECTIO XVI.—Fem.

Corpus breve, latum: caput thorace paullo latius: antennæ clavatae, compactæ, corporis dimidio breviores; articuli 5°. ad 10^{um}. brevissimi, gradatim latores et breviores; clava longi-ovata, maxima, articulo 10°. multo latior et quadruplo longior: thorax subrotundus, paullo longior quam latus; prothorax brevissimus; mesothoracis parapsidum suturæ vix conspicuæ; metathorax parvus: abdomen brevi-ovatum, thorace vix longius; supra planum, subtus angulatum, apice abrupte angustius elevatum acuminatum; segmentum 1^{um}. magnum; sequentia brevia: oviductus occultus: alæ mediocres; nervus cubitalis radiali vix brevior.

Sp. 86. Pter. grandiclava. Fem. *Viridi-aeneus, abdomen fere nigrum, antennæ nigro-fuscæ, pedes fulvi, alæ fulvo-limpidæ.*

Aeneus: caput viride, inter oculos æneo-viride: oculi ocellique obscure rufi: antennæ nigro-fuscæ; articulus 1^{us}. pallide fulvus; 2^{us}. fuscus: pro- et metathorax æneo-virides: abdomen supra purpureo-viride, subnigrum; segmentum 1^{um}. cupreo-viride, micans: pedes pallide fulvi; coxæ virides; meso- et metatarsi flavi, apice fusci: alæ fulvo-limpidæ; squamulæ et nervi fulva, hi basi flavi, illæ apice fuscæ; stigma parvum. (Corp. long. lin. 1; alar. lin. 1 $\frac{1}{4}$.)

Found near London.

SECTIO XVII.—Fem.

Corpus breve, latum: caput magnum, thorace latius: antennæ clavatae, corporis dimidio vix breviores; articuli 5°. ad 10^{um}. curtantes et latescentes; clava articulo 10°. fere duplo longior paullo latior: thorax brevi-ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax mediocris: abdomen brevi-ovatum, supra planum, subtus convexum, non angulatum, thorace paullo latius vix brevius; segmentum 1^{um}. magnum; reliqua brevia: oviductus occultus: alæ angustæ; nervus cubitalis radiali paullo brevior.

Sp. 87. Pter. congruus. Fem. *Æneo-viridis, abdominalis discus purpureus, antennæ nigro-fuscæ, pedes fulvi, alæ sublimpidæ.*

Æneo-viridis, parum nitens : caput viride : oculi ocellique obscure rufi : antennæ nigro-fuscæ ; articulus 1^{us}. fulvus, apice fuscus ; 2^{us}. fuscus : abdomen æneum, nitens ; discus obscure purpureus ; segmentum 1^{um}. laete viridi-eupreum : pedes fulvi ; coxae virides ; femora basi fusca ; tarsi flavi, apice fusi ; protarsi fulvi : alæ sublimpidæ ; squamulæ viridi-fuscæ ; nervi flavi ; stigma minutum ; metalæ limpidæ. (Corp. long. lin. $\frac{5}{4}$ —1; alar lin. 1—1 $\frac{1}{4}$.)

Far. β.—Abdomen viridi-æneum ; discus obscure cupreus ; segmentum 1^{um}. cupreo varium.

Var. γ.—Abdomen viride ; discus obscure cupreus : femora omnino fulva.

August ; near London.

SECTIO XVIII.—Mas et Fem.

Mas.—Corpus breve, contractum : caput thorace vix latius : antennæ clavatæ, capitis thoracisque longitudine ; articuli 5°. ad 10^{um}. brevissimi, latitudine incrementales ; clava maxima, longi-ovata, articulo 10°. multo latior et plus duplo longior : thorax ovatus, parum convexus : prothorax supra vix conspicuus : mesothoracis parapsides scuto in unum confusæ : metathorax mediocris : abdomen rotundum, thorace latius ; segmentum 1^{um}. magnum ; sequentia brevia : alæ perangustæ, hirtissimæ ; nervus cubitalis radiali vix brevior.

Fem.—Caput thoracis latitudine : antennæ capite thoraceque paulo breviores ; clava ovata, mediocris, articulo 10°. latior et duplo longior : abdomen brevi-ovatum, thorace paulo latius, supra planum, subtus angulatum, non compressum.

Sp. 88. Pter. fucicola. Mas et Fem. *Nigro-æneus, antennæ nigro-piceæ, pedes fulvi aut picei, alæ subfuscæ.*

Mas.—Nigro-æneus, obscurus : oculi ocellique obscure rufi : antennæ nigro-piceæ ; articuli 1^{us}. basi 2^{us}. que apice fulvi : abdomen nitens : pedes fulvi ; coxae nigro-æneæ ; tarsi apice fusi : alæ subfuscæ ; squamulæ et nervi fusca ; stigma minutum. (Corp. long. lin. $\frac{1}{4}$; alar. $\frac{1}{3}$.)

Fem.—Antennæ articulis 1°. et 2°. nigro-aeneis: femora et tibiæ fulvo-picea: alæ nonnunquam ademptæ. (Corp. long. lin. $\frac{3}{4}$; alar. 1.)

September; on sea-weed, near Torquay, in South Devonshire.

SECTIO XIX.—Fem.

Corpus mediocre: caput thorace latius: antennæ graciles, exterrsum crassiores, corporis dimidio longiores; articuli 5°. ad 10^{um}. vix curtantes; clava lanceolata, articulo 10°. duplo longior vix latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax parvus: abdomen longi-ovatum, supra planum, subtus valde angulatum, apice elevatum: lanceolatum, thorace longius; segmentum 1^{um}. magnum; sequentia breviora: oviductus occultus: alæ breves, angustæ; nervus cubitalis radiali brevior.

Sp. 89. Pter. nubilipennis. Fem. *Viridi-cyaneus, abdomen rufum, antennæ nigræ apice fuscae, pedes rufi fusco cingulati, proalæ fusco nebulosæ.*

Cyaneus: os fuscum: oculi ocellique obscure rufi; antennæ nigræ, apice fuscae; articulus 1^{us}. flavus; 2^{us}. 3^{us}. et 4^{us}. fulvi: gula fulva: abdomen rufum, apice aeneo-fuscum; segmentum 1^{um}. basi utrinque viride: pedes rufi; coxæ cyaneæ; femora et metabiæ supra apices versus fusca; tarsi flavi, apice fusi: alæ sublimpidæ; proalæ fusco nebulosæ; squamulæ cyaneo-fulvæ; nervi fulvi; stigma parvum. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $\frac{3}{4}$.)

Var. β.—Caput et thorax viridi-cyanea: femora et tibiæ omnino rufa.

Found near London.

SECTIO XX.—Mas et Fem.

Mas.—Corpus breve, sublineare: caput thorace latius: antennæ graciles, subfiliformes, corporis dimidio longiores; articuli 5°. ad 10^{um}. subæquales; clava lanceolata, articulo 10°. plus duplo longior paullo latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ conspicuae: metathorax mediocris: abdomen subrotundum, thorace latius et brevius, apice truncatum; segmentum 1^{um}. magnum; sequentia brevia: alæ parvæ aut minimæ.

Fem.—Longior : caput thorace paullo latius : antennæ subclavatae ; corporis dimidii longitudine ; clava articulo 10°. latior : abdomen ovatum, subconvexum, thorace paullo longius, subtus angulatum, apice elevatum acuminatum : oviductus occultus.

Sp. 90. Pter. apicalis. Fem. *Viridis æneo et cyaneo-varius*, *antennæ fuscæ, pedes fulvi, alæ fulvo-limpidae.*

Æneo-viridis : caput viride : oculi ocellique rufi : antennæ obscure fuscæ, apice pallidiores ; articulus 1^{us}. niger, basi fulvus : abdominis segmentum 2^{um}. saepè magnum : pedes fulvi ; coxae virides ; meso- et metatarsi flavi, apice fulvi : alæ fulvo-limpidae, parvæ ; squamulæ et nervi flava, illæ apice fuscæ ; stigma parvum. (Corp. long. lin. $\frac{1}{3}$ — $\frac{2}{3}$; alar. lin. $\frac{3}{4}$ —1 $\frac{1}{2}$.)

Var. β.—Antennæ fuscæ ; articulus 1^{us}. basi fulvus.

Var. γ.—*Viridis.*

Var. δ., *Var. γ.* similis : antennæ pallide fuscæ : squamulæ apice fulvæ.

Var. ε.—*Viridi-æneus* ; caput æneo-viride : antennæ fuscæ ; articulus 1^{us}. obscurior, basi fulvus : abdomen basi cupreo-æneum.

Var. ζ.—Abdomen basi cyaneo-viride.

Var. η.—*Cyaneo-viride.*

Var. θ.—Caput cyaneo-viride : abdominalis discus cyaneus.

Var. ι.—*Viridi-æneus* : abdomen viride.

Var. κ.—Antennæ fulvæ ; articuli 1°. ad 4^{um}. fuscæ.

Var. λ.—Æneo-viridis : mesothorax æneus : abdomen basi viride.

May to October ; on grass in fields ; near LONDON. Isle of Wight.

Sp. 91. Pter. hemipterus. Mas et Fem. *Viridis æneo et cyaneo-varius*, *antennæ fuscæ aut fulvæ, pedes fulvi aut flavi, alæ vix ullæ.*

Mas.—*Viridis*, nitens : oculi ocellique rufi : antennæ fuscæ ; articuli 1°. ad 4^{um}. fulvi : sexualia fulva : pedes pallide fulvi ; coxae virides ; meso- et metatarsi flavi, apice fuscæ : alæ minimæ, subfulvæ ; squamulæ et nervi fulva.

Fem.—Antennæ obscure fuscæ, apice pallidiores ; articulus 1^{us}. nigro-fuscus, basi fulvus. (Corp. long. lin. $\frac{1}{3}$ — $\frac{2}{3}$.)

Var. β.—*Mas*, antennæ fulvæ ; articulo 1°. ad 4^{um}. flavi : pedes flavi ; meso- et metatarsi pallidiores.

Var. γ.—*Mas*, caput et abdomen cyaneo-viridia.

Var. δ.—*Mas*, viridi-aeneus : abdomen basi et caput viridia.

Var. ε.—*Mas*, abdomen cyaneum.

Var. ζ.—*Mas*, æneo-viridis : abdomen basi cupreo varium.

Var. η.—*Mas*, æneus : caput æneo-viride : abdomen cupreo-æneum ; segmentum 1^{um}. cupreo-viride.

Var. θ.—*Mas*, cyaneus : antennæ fuscæ ; articuli 1^{us}. fulvus, apice fuscus.

Var. ι.—*Mas*, antennæ fuscæ ; articulus 1^{us}. basi fulvus.

Var. κ.—*Fem.* æneo-viridis.

Var. λ.—*Fem.* antennæ articulo 1^o. prorsus nigro-fusco.

Var. μ.—*Fem.* cyaneus : antennæ fuscæ ; articuli 1^o. ad 4^{um}. obscuriores : profemora supra pallide fusca.

July to September; on grass in fields; near London.

SECTIO XXI.—*Mas* et *Fem.*

Mas.—Corpus mediocre : caput thorace paullo latius : antennæ extrorsum crassiores, corporis dimidio vix longiores ; articuli 5^o. ad 10^{um}. longitudine decrescentes ; clava longi-ovata, articulo 10^o. latior et plus duplo longior : thorax crassus, brevi-ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen planum, sublineare, thorace brevius et angustius ; segmentum 1^{um}. magnum ; sequentia brevia : sexualia exerta : alæ mediocres ; nervus cubitalis radiali brevior.

Fem.—Antennæ clavatae, corporis dimidii vix longitudine ; articuli 5^o. ad 10^{um}. latitudine crescentes ; clava ovata, articulo 10^o. duplo longior et paullo latior : metathorax brevissimus : abdomen ovatum aut longi-ovatum, thorace angustius, supra planum, subtus angulatum, apice acuminatum elevatum : oviductus plerunque occultus.

Sp. 92. Pter. cingulipes. *Mas* et *Fem.* *Viridis cyaneo varius*, *abdominis discus cupreus*, *antennæ fuscæ*, *pedes flavi*, *femora viridia*, *alæ albo-limpidae*.

Mas.—*Viridis* : oculi ocellique rufi : antennæ fuscæ ; articulus 1^{us}. fulvus ; 2^{us}. subtus pallidior : abdomen cyaneo-viride, nitens ; discus cupreo-æneus : sexualia fulva : pedes flavi ; coxae et femora viridia ; meso- et metatarsi pallide flavi, apice fulvi : alæ albolimpidae ; squamulæ fulvæ, antice virides ; nervi flavi ; stigma minutum.

Fem.—Parum nitens: antennæ nigro-fuscae; articulus 1^{us}. nigro-viridis, basi fulvus: abdomen ovatum, lète cyaneo-viride, thorace paullo longius; discus obscure purpureus; segmentum 1^{um}. cupreo-varium; 5^{um}. et 6^{um}. cyanea: oviductus fulvus: pedes fulvi; coxae et femora viridia; meso- et metapedum tibiæ et tarsi flava, fusco hi terminati illæ cingulatae. (Corp. long. lin. 1—1½; alar. lin. 1½—1¾.)

Var. β.—*Mas*, antennæ articulo 1°. fulvo apice viridi, 3°. fusco-viridi.

Var. γ.—*Mas*, cyaneus: abdominis discus cupreus; segmentum 1^{um}. viridi varium.

Var. δ.—*Mas*, meso- et metatibiæ fusco cingulatae; protibiæ et protarsi fulva.

Var. ε.—*Mas*, caput et thorax viridia.

Var. ζ.—*Mas*, antennæ articulis 1°. et 2°. fusco-viridibus.

Var. η.—*Fem.* cyaneo-viridis: abdomen cyaneum; discus obscure purpureus; segmentum 1^{um}. cupreo varium.

Var. θ.—*Fem.* cyaneus: abdominis discus obscure purpureus.

Var. ι.—*Fem.* cyaneo-viridis: abdomen purpurco-cyaneum; discus obscure purpureus; segmentum 1^{um}. cyaneo-viride.

Var. κ.—*Fem.* cyaneo-viridis: abdomen cyaneum; discus obscure cupreus.

September; Isle of Wight.

Sp. 93. Pter. albipennis. Fem. *Præcedente gracilior, abdomen longius et angustius.*

Lète viridis: oculi ocellique rufi: antennæ obscure fuscae; articulus 1^{us}. nigro-viridis, basi fulvus: abdomen longi-ovatum, cyaneo-viride; discus æneus; segmentum 1^{um}. æneo-varium, 7^{um}. viridi-æneum: pedes fulvi; coxae et femora viridia; meso- et metapedum tibiæ apice et basi tarsique flava, hi apice fusi: alæ albo-limpidæ; squamulæ fulvæ, antice virides; nervi flavi; stigma minutum. (Corp. long. lin. ¾—1½; alar. lin. 1—1¾.)

Var. β.—Abdomen cyaneum; segmentum 1^{um}. cupreo-varium; 7^{um}. viridi-æneum.

Var. γ.—Viridi-cyaneus: abdomen cyaneum, basi cyaneo-viride: meso- et metatibiæ fusco-cingulatae.

Var. δ., *Var. β.*, similis: meso- et metatibiæ fusco cingulatae.

September; Isle of Wight.

Sp. 94. Pter. plenus. Mas et Fem. P. cingulipedis *statura, antennæ graciliores, alæ ampliores.*

Mas.—Viridi-cyanus : oculi ocellique rufi : antennæ fulvæ ; articuli 1^{us}. et 2^{us}. nigro-fusci, ille basi flavus : pedes læte flavi ; coxae et femora viridia ; profemora apice flava ; trochanteres et protarsi fulvi ; meso- et metatarsi apice fusci : alæ albo-limpidæ ; squamulæ et nervi flava, illæ antice viridi-fuscæ ; stigma minutum.

Fem.—Viridis : antennæ fuscæ ; articulus 1^{us}. nigro-viridis, basi fulvus : abdomen æneo-viride ; segmenta 2^o. ad 4^{um}. apice viridi-cyanæ : femora apice flava. (Corp. long. lin. $\frac{3}{4}$ —1 $\frac{1}{4}$; alar. lin. 1—1 $\frac{1}{2}$)

September ; near Linton, North Devonshire.

Sp. 95. Pter. solutus. Fem. *Æneo-viridis, antennæ fuscæ, pedes flavi femoribus viridibus tibiis fusco cingulatis, alæ limpidae.*

Æneo-viridis : oculi ocellique rufi : antennæ fuscæ ; articuli 1^{us}. et 2^{us}. obscuriores, ille basi fulvus : thoracis discus æneus : abdomen læte viride, ovatum, thorace paullo longius et angustius ; segmentum 1^{um}. cupreo-varium ; sequentia basi et medio cuprea : pedes flavi ; coxae et femora viridia ; tibiæ fusco cingulatae ; protarsi fulvi ; meso- et metatarsi apice fusci : alæ limpidae ; squamulæ et nervi fulva, illæ apice fuscæ ; stigma pallide fuscum, minutum. (Corp. long. lin. 1 $\frac{1}{2}$; alar. lin. 1 $\frac{1}{2}$)

Var. β.—Antennæ obscure fuscæ ; articuli 1^{us}. et 2^{us}. nigro-virides.

Var. γ.—Caput et thorax viridia, hujus discus viridi-æneus : tibiæ fulvo cingulatae.

September ; near the Land's End, Cornwall.

Sp. 96. Pter. berylli. Fem. *Viridis, abdominis discus cupreus, antennæ nigræ, pedes flavi, femora viridia, alæ limpidae.*

Sature viridis : oculi ocellique rufi : antennæ nigræ, corporis dimidii longitudine ; articulus 1^{us}. nigro-fuscus, basi fulvus : abdomen longi-ovatum, nitens, thorace multo longius et angustius, apice attenuatum ; segmentum 1^{um}. apice basique cupreum ; 2^{um}. 3^{um}. et 4^{um}. cuprea, basi utrinque viridia ; 5^{um}. et 6^{um}. apice 7^{um}. que basi cuprea : oviductus subexertus : pedes flavi ; coxae et femora viridia, hæ apice flavæ ; meso- et metapodium tibiæ fulvo cin-

gulatae, tarsi apice fusi; protarsi fulvi: alae limpidae; squamulae virides; nervi fulvi; stigma fuscum, parvum. (Corp. long. lin. 1½; alar. lin. 2.)

August; near London.

Sp. 97. Pter. thoracicus. Fem. *Cupreo-aeneus, antennæ piceæ, pedes fulvi, femora æneo-viridia, tibiæ fusco cingulatæ, alæ limpidae.*

Cupreo-aeneus: caput viridi-aeneum, inter oculos cupreo-aeneum: oculi ocellique rufi: antennæ nigro-piceæ, corporis dimidio vix breviores; articulus 1^{us}. basi fulvus: thorax brevis, latus, crassus: abdomen longi-ovatum, nitens, thorace longius et multo angustius, apice non attenuatum; segmentum 1^{um}. laete viride, cupreovarium, apice obscure cupréum; 2^{um}. 3^{um}. et 4^{um}. obscure cuprea, basi utrinque æneo-viridia; sequentia æneo-viridia: pedes fulvi; coxae et femora æneo-viridia; tibiæ nigro-fuscae, apice basique fulvæ; meso- et metatarsi flavi, apice fusi: alæ limpidae; squamulae æneo-fuscae; nervi pallide fusi; stigma obscurius, mediocre. (Corp. long. lin. 1½; alar. lin. 2.)

Found near London.

Sp. 98. Pter. cupreus. Fem. *Cupreus, abdomen basi viride, antennæ nigrae, pedes fulvi, femora ænea, tibiæ fusco cingulatæ, alæ limpidae.*

Cupreus: caput æneo-cupreum: oculi ocellique rufi: antennæ nigrae, corporis dimidii longitudine; articulus 1^{us}. nigro-aeneus, basi fulvus: thorax crassus: abdomen ovatum, nitens, thorace paullo longius vix angustius non attenuatum; segmentum 1^{um}. laete viride cupreovarium: oviductus occultus: pedes fulvi; coxae et femora ænea; meso- et metapodium tibiæ fuscae apice basique flavæ, tarsi flavi apice fusi: alæ limpidae; squamulae et nervi fulva, illæ apice virides; stigma pallide fuscum, parvum; metalarum nervi flavi. (Corp. long. lin. 1½; alar. lin. 2.)

Var. β.—Abdominis segmentum 1^{um}. laete cupreum.

September; Isle of Wight.

SECTIO XXII.—Fem.

Sect. XXI. similis: clava longi-ovata, articulo 10°. plus duplo longior.

Sp. 99. Pter. mesochlorus. Fem. *Viridis æneo et cupreο variοs, antennæ fusca, pedes flavi, femora fusca, alæ limpidae.*

Viridis, obscurus: oculi ocellique rufi: antennæ pallide fuscæ, corporis dimidio breviores; articulus 1^{us}. fulvus, apice fuscus; clava fulva: abdomen cupreο-viride, thorace multo longius et angustius, apice attenuatum; segmentum 1^{um}. læte viride micans: pedes flavi; coxæ virides; femora fusca, apice flava; tibiæ fulvo cingulatæ; protarsi fulvi; meso- et metatarsi apice fusi: alæ limpidae; squamulæ et nervi fulva, illæ apice obscuriores; stigma fuscum, minutum. (Corp. long. lin. 1 $\frac{1}{2}$; alar. lin. 1 $\frac{3}{4}$.)

Var. β.—*Viridi-æneus*: abdomen segmento 2^o. ad apicem viridi-cupreum: alæ minime fulvo tinctæ.

Var. γ, *Var. β*, similis: thoracis dorsum cupreο-æneum: abdominis segmentum 1^{um}. cupreο-varium.

Var. δ.—Abdominis segmenta 2^o. ad 5^{um}. purpurea, subtus cuprea; 6^{um}. et 7^{um}. cupreο-viridia.

September; Isle of Wight, Dorsetshire, South Devonshire.

SECTIO XXIII.—Mas et Fem.

Corpus mediocre, *fem.* latius: caput thorace latius: mandibulæ subquadrate, arcuatæ, similes, dentibus 4 acutis armatae; dens 1^{us}. magnus, arcuatus; 2^{us}. paullo minor; 3^{us}. et 4^{us}. multo minores, subæquales: maxillæ longæ, subarcuatæ; laciniae angustæ, acuminatae, intus lobatae, extus pilosæ; palpi 4-articulati, graciles, filiformes; articuli 1^{us}. et 3^{us}. subæquales; 2^{us}. paullo longior; 4^{us}. longi-fusiformis, 3^o. fere duplo longior, apice pilosus: labium longi-ovatum, angustum; palpiger furcatus; ligula brevis, lata, ciliata; palpi 3-articulati, crassi, ligula vix longiores; articulus 1^{us}. subcyathiformis; 2^{us}. brevissimus; 3^{us}. fusiformis, acuminatus, 1^o. multo longior: *mari* antennæ filiformes, corporis dimidio paullo longiores; articuli 5^o. ad 10^{um}. longitudine sensim decrescentes; clava linearis, acuminata, articulo 10^o. duplo longior: *fem.* antennæ crassiores, subfiliformes; clava longi-ovata; articulo 10^o. duplo fere longior vix latior: thorax *mari* longi-ovatus, *fem.* ovatus; prothorax brevissimus; mesothoracis parapsidum suturæ vix conspicuæ; metathorax bene determinatus: *mari* abdomen sublineare, depresso, thorace angustius vix longius, subtus carinatum; segmentum 1^{um}. magnum; sequentia breviora, subæqualia; sexualia exerta: *fem.* abdomen ovatum, vix acuminatum, thorace paullo brevius,

supra planum, non angulatum nec compressum; segmenta 6^{um}. et 7^{um}. quam *mari* paullo longiora; oviductus subexertus: alæ mediocres; nervus cubitalis radiali multo brevior.

- | | |
|-------------------------------------|--|
| Sp. 100. Pter. puparum. Mas. | <i>Viridis</i> , <i>antennæ fulvæ</i> ,
<i>pedes flavi</i> . Fem. <i>Aeneo-viridis</i> , <i>antennæ nigrae</i> , <i>pedes fuscæ</i> , <i>semora viridia</i> . |
| · · · · · | <i>Goed. Ins. I.</i> 178. tab. 77; <i>Mer. Ins. Europ. tab. 44</i> , 52; <i>Frisch. Ins. IV.</i> 10. tab. 1. fig. 5. 1, 2; <i>Roes. Ins. II.</i> 18. tab. 3. fig. 4, 5, a. b.; <i>Réaum. Ins. VI.</i> tab. 30. fig. 13, 14, 15; <i>De Geer. Ins. I.</i> tab. 30. fig. 8; <i>Onom. Hist. Nat. IV.</i> 505; <i>Müller. Syst. Nat. Linn. V. 2.</i> 860. 66. <i>Geoff. Ins. II.</i> 305. 24. |
| <i>Cynips viridi sericeus</i> , &c. | <i>Scop. Ent. Carn.</i> 765. |
| <i>Ichneumon Antiopæ</i> . . | <i>Linn. Syst. Nat. II.</i> 939. 66; <i>Faun. Suec.</i> 1636; <i>Fabr.^b Sp. Ins. I.</i> 438. 113; <i>Mant. Ins. I.</i> 270. 135; <i>Syst. Ent.</i> 342. 88; <i>Ent. Syst. II.</i> 186. 221; <i>Gmel. Syst. Nut. V.</i> 2713. 66; <i>Schrink. Enum. Ins. Austr.</i> 758; <i>Vill. Ent. Lin. III.</i> 206. 234; <i>Müll. Zool. Dan. Prodr.</i> 159. 1855; <i>Fuesli. Verz.</i> 50. 967. |
| <i>Diplolepis puparum</i> . . . | <i>Fabr. Syst. Piezat.</i> 151. 15. |
| <i>Cynips puparum</i> . . . | <i>Fourc. Ent. Par. II.</i> 387. 24; <i>Encycl. Méthod. V.</i> 782. 12. |
| <i>Pteromalus puparum</i> . . . | <i>Swed. Act. Holm. an.</i> 1795; <i>Nees ab Esenb. Ich. affin. Monogr. II.</i> 107. 21. |

Mas.—Laetissime viridis, nitens: labium et maxillæ viridia, illum quasi squameum; laciniae fuscae; palpi, palpiger, labium et maxillarum lobi pallide flava: mandibulæ flavæ, apice obscuriores: oculi ocellique rufi: antennæ fulvæ; articuli 2^o. ad 6^{um}. intus necnon sequentes apice basique fusc: abdomen viridi-

^b This author's description was probably taken from *Pter. muscarum*.

aureum; discus cupreo micans: sexualia fulva: pedes lâete flavi; coxae virides; meso- et metatarsi pallidiores, apice fulvi: alæ limpidissimæ; squamulæ et nervi flava, illæ apice fuscae; stigma fulvum, parvum.

Fem.—Æneo-viridis, parum nitens: palpi fuscæ, basi viridi-fuscæ: antennæ nigræ; articulus 1^{us}. fulvus, apice nigro-fuscus: abdomen viridi-æneum; discus obscure cupreus; segmentum 1^{um}. lâete viride, cupreo varium: oviductus rufus; vaginæ nigræ: pedes fuscæ; coxae æneo-virides; femora viridi fusca; genua, tibiæ apice tarsique flava, hi apice fuscæ; protibiæ fusco-fulvæ; protarsi fulvi: alarum squamulæ et nervi fulva, illæ apice fuscae; stigma pallide fuscum. (Corp. long. lin. $\frac{3}{4}$ — $1\frac{1}{3}$; alar. lin. $1\frac{1}{4}$ —2.)

Var. β.—*Mas*, thorax æneo varius. *

Var. γ.—*Mas*, antennæ fulvæ; articulus 2^{us}. intus fuscus; sequentes apice basique minime fuscae.

Var. δ.—*Mas*, thorax supra cyaneo-viridis.

Var. ε.—*Mas*, antennæ fusco-fulvæ; articulus 1^{us}. flavus, apice fulvus.

Var. ζ.—*Fem.* caput viride: abdomen æneum; segmenta basi viridia.

Var. η.—*Fem.* *Var. β.* similis: thorax viridis.

Var. θ.—*Fem.* tibiæ flavae; meso- et metatibiæ fulvo fasciatæ.

Var. κ. *Fem.* abdomen æneo-viride, basi ad medium cupreum.

Var. ι.—*Fem.* abdomen æneum; segmentum 1^{um}. viride, basi cupreum.

Var. λ.—*Fem.* caput et metathorax viridia.

Var. μ.—*Fem.* antennæ articulo 1^o. fusco, basi fulvo; meso- et metatarsi basi flavi.

Described from specimens found near London, or sent to me from Paris, by the Comte de Castelnau. It is very abundant in Europe during the summer, infesting butterflies (*Vanessa* and *Pontia*) while in the chrysalis state. The fly appears in three weeks after the egg is laid. The relative number of males and females in a chrysalis is very variable. I once had a bright gold-coloured chrysalis of *Vanessa Polychloros*. In a few days its metallic hue changed to a dead yellow, that became gradually darker. I then opened it and found it full of pupæ. Their colour was pale, but soon turned to black, and then to a metallic green. They employed their legs, particularly the fore-pair, to divest themselves of their covering. Twenty males first came to maturity in the morning, and twenty more, and one female, in the afternoon of the same day. On the following day, thirty-nine males and four-

teen females appeared in the morning, three males and eight females in the afternoon. Two females appeared on the third day, and one on the fourth, making in the whole eighty-two males and twenty-six females. I have seen thirty females and four males emerge from three holes in the middle of a chrysalis of *Pontia rapæ*, and thirty-six females and four males from another chrysalis of the same butterfly; these last were much smaller than the former. Degeer mentions an instance when one chrysalis produced only males, and another only females.

SECTIO XXIV.—Mas. et Fem.

Mas.—Corpus mediocre: caput thorace vix latius: mandibulæ quadratæ, subarcuatæ, similes, dentibus 4 minutis armatae; 1^{us}. acutus; 2^{us}. et 3^{us}. paullo breviores et obtusiores; 4^{us}. latus, obtusus: maxillæ longæ, subarcuatæ; laciniae angustæ, acuminatae, intus lobatae, extus pilosæ; palpi 4-articulati, graciles, filiformes; articuli 1^{us}. et 3^{us}. subæquales; 2^{us}. paullo longior; 4^{us}. longi-fusiformis, 2°. fere duplo longior, apice acuminatus pilosus: labium longi-ovatum, angustum; palpiger furcatus; ligula brevis, lata, ciliata; palpi 3-articulati, extrorsum crassiores, ligula paullo longiores; articulus 1^{us}. mediocris, 2^{us}. brevissimus, 3^{us}. fusiformis, 1°. longior: antennæ filiformes, corporis dimidio paullo longiores; articuli 5°. ad 10^{um}. longitudine decrescentes; clava linearis, acuminata, articulo 10°. duplicato longior: thorax longiovatus, convexus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax bene determinatus: abdomen sublineare, depresso, subtus carinatum, thoracis longitudine et latitudine, basi angustius; segmentum 1^{um}. magnum; sequentia breviora, subæqualia: sexualia occulta: alæ mediocres; nervus cubitalis radiali brevior.

Fem.—Mari latior: antennæ crassiores, subfiliformes; clava longiovata, articulo 10°. duplo fere longior vix latior: abdomen rotundum, supra planum, subtus angulatum, thorace multo brevius: oviductus occultus.

Sp. 101. Pter. omnivorus. *Mas.* *Viridis*, *abdomen flavomaculatum*, *antennæ fulvo-fuscæ*, *pedes flavi*. *Fem.* *Viridi-aeneus*, *antennæ nigro-fuscæ*, *pedes fulvi*, *femora fusca*.

Mas.—Læte viridis, nitens: os fulvum: oculi ocellique rufi: antennæ fulvo-fuscæ; articulus 1^{us}. fulvus, apice obscurior: thorax

æneo-viridis : abdomen basin versus flavo maculatum ; discus cupreus : pedes lète flavi ; coxae virides ; tarsi apice fulvi ; unguis et pulvilli fusci : alæ limpidæ ; squamulæ et nervi flava, illæ apice fulvæ ; stigma minutum.

Fem.—*Viridi-æneus*, parum nitens : oculi ocellique obscure rufi : antennæ nigro-fuscæ ; articulus 1^{us}. fulvus, apice fuscus : metathorax æneo-viridis : abdomen æneo-cupreum ; segmentum 1^{um}. lète viride, fulvescens, apice cupreum, subtus pallidius : pedes fulvi ; coxae virides ; femora fusca, apice flava ; tarsi pallide fulvi ; unguis et pulvilli fusci. (Corp. long. lin. 1—1 $\frac{3}{4}$; alar. 1 $\frac{1}{2}$ —2 $\frac{1}{4}$.)

Var. β.—*Mas*, antennæ articulo 1^o. pallide fulvo, basi flavo.

Var. γ.—*Mas*, thorax viridis.

Var. δ.—*Mas*, abdomen utrinque et apice cupreum.

Var. ε.—*Fem.* caput et thorax æneo-viridia : meso- et metatibiæ fusco cingulatae.

Var. ζ.—*Fem.* femora fulva.

Var. η.—*Fem.* tibiæ et tarsi obscure fulva.

July ; near London. Reared from the chrysalises of *Papilionites*, at Paris, by the Comte de Castelnau ; of a species of *Acronycta*, by Mr. Davis ; and of *Eyprepia caia*, which *Exorista larvarum* had already infested, by Mr. Newman, who published an interesting account of it in Loudon's Mag. Nat. Hist. Vol. V. p. 252.

SECTIO VI.

Sp. 102. Pter. lugubris. Fem. P. mediocri *similis* at minor brevior obscurior.

Viridi-æneus, parum nitens : caput viride : oculi ocellique rufi : antennæ fuscæ ; articulus 1^{us}. obscurior, basi fulvus : abdomen nitens ; segmentum 1^{um}. viride, cupreo varium ; discus cupreo-purpureus : pedes flavi ; coxae virides ; femora viridi-fusca, apice flava ; tibiæ fuscæ cingulatae ; tarsi apice fusci ; protarsi fulvi : alæ sublimpidæ ; squamulæ et nervi flava, illæ apice fuscæ ; stigma fulvum, parvum. (Corp. long. lin. $\frac{3}{4}$ —1 ; alar. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$.)

Var. β.—Mesothorax cupreo-æneus.

Var. γ.—Caput et thorax æneo-viridia

September ; Isle of Wight.

Sp. 103. Pter. nigro-aeneus. Fem. P. lugubri *similaris at obscurior, antennæ crassiores.*

Nigro-aeneus, parum nitens : caput nigro-viride : oculi ocellique rufi : antennæ fuscae ; articulus 1^{us}. obscurior, basi fulvus : abdomen nitens ; segmentum 1^{um}. viride, cupreo-varium ; discus cupreo purpureus : pedes flavi ; coxae virides ; femora viridi-fusca, apice flava ; tibiæ fusco cingulatae ; tarsi apice fusti ; protarsi fulvi : proalæ subfuscæ ; squamulae virides ; nervi fulvi ; stigma minutum ; metalaæ sublimpidæ. (Corp. long. lin. $\frac{5}{4}$ —1 ; alar. 1 $\frac{1}{2}$ —1 $\frac{1}{2}$.)

Var. β.—Abdomen nigro-viride ; segmentum 1^{um}. cupreo-aeneum.

Var. γ., *Var. β.*, similis : abdominis discus cupreus.

September; Isle of Wight.

ART. XXI.—*Varieties.*

5. *Two Pupæ of Saturnia in one Cocoon.*—The following singular fact perhaps might not be deemed unworthy of insertion in your valuable magazine. A lady, whose name is Eginton, residing near Worcester, had a very fine larva of *Saturnia Pavonia minor* brought to her, which shortly afterwards formed its cocoon, and from its extraordinary size, she entertained great expectations of a very fine specimen to adorn her cabinet the following spring ; but to her great astonishment there emerged therefrom a *male* and *female* of the species in great perfection. A few days afterwards I called upon the lady, and witnessed this most singular fact, and made such inquiry as to be fully satisfied that no other insect of the kind, in either state, could have gained admission into the box where the larvæ had been deposited to undergo its transformation.

With the lady's kind permission I have thought fit to mention her name, who can, if needful, corroborate this very singular and extraordinary vagary of nature, as I am quite disposed to think that many Entomologists will imagine that some mistake must have been made, or else perhaps doubt or disbelieve the circumstance altogether ; and really I must be candid enough to remark, that had I not been an eye-witness thereto, I should be much inclined to dispute the truth of it

myself. I have been an Entomologist, and have collected diligently for upwards of thirteen years, and have known very singular occurrences, such as hermaphrodites of the order *Sphingites*, and some instances of Lepidopterous insects with five wings; others, where circular and rather large holes have occurred in the anterior wings, though the specimens have been quite perfect in every other respect; but an instance like the foregoing is, I think, of very unusual occurrence.

A. EDMUNDS, Jun.

PARK-PLACE, LONDON-ROAD. WORCESTER,

May 12, 1835.

6. *On the assembling of certain Insects.*—Probably it has fallen to the lot of most of the ardent collectors of insects, to witness the extraordinary “gathering” of the males of several species of *Lepidoptera*, to pay their attentions to their virgin females. On one occasion I had ocular demonstration of the attractive charms of a female of one of the *Bombicydæ*, and with ruthless hand put the gallants to death in great numbers. Recently I was fortunate enough to ascertain that one *Coleopterous* insect at least was an “assembler.” During the Easter week I met with *Elater cylindricus* in great profusion, on the banks of the Tees, below Yarm. All I captured were males, with one single exception. They appeared to be only just emerging from the pupæ; and feeling anxious to witness their development, I took some pains to find whence they came. At length I spied an *Elater* emerging from a bank which had been cast up by a recent flood—its head only was visible. I turned out the insect with my finger, and suffered it to crawl for a minute or two on the sand thrown out. The “gentlemen” soon made their appearance, and in less than five minutes, sixteen had assembled on a space I covered with my hand, running over the little sandy heap with most vigorous ardour. The female was in my fingers, and soon the males arrived and crawled about my hand with extraordinary eagerness. I removed several yards lower down the river; and after remaining a few minutes on one spot, was soon visited by numerous suitors, who forced their way with great accuracy towards the object of their pursuit.

G. T. RUDD.

YARM, May 18, 1835.

7. *The Aphis of the Cowslip.*

"Now in the cowslip's dewy cell
The *Aphis* makes its bed."

It begins in March to spread itself over the calyxes of the cowslips ; it then appears like a green speck, sprinkled with white powder, and has tribes of little spring-tails and ticklers^a skipping around it. In the course of a month it becomes wonderfully populous, and varies from half a line to a line and a half in length,—and to one with wings on its back are fifty without. The young one is dingy green, oval convex, formed of transverse parallel segments, the antennæ paler and longer than the body, tipped with brown from the third to the sixth joint, the seventh all brown, the eyes dark brown, the mouth and horns of the abdomen with brown tips, the legs short and thick. As it advances in life it becomes darker, its antennæ and legs are longer and more tapering, and some of the thoracic segments develope and bear wings or the rudiments thereof. The wings are almost colourless, the costa pale green, and the nervures brown. When it arrives at perfection the thorax is often spotted with black, and the potent juice of the cowslip gives it a jolly and rosy appearance. It does not inhabit—

—“pale primroses,
That die unmarried, ere they can behold
Bright Phœbus in his strength.”

Their insipidity is not agreeable to its taste, nor their hairy leaves to its skin. When the summer comes the cowslips fade and wither away, and the *Aphis* is seen no more ; or its only vestiges are, some bleaching skeletons amidst a tangled mat of spiders' webs.

TOT.

8. *Pieris Cratægi*. Yesterday this butterfly was so abundant at Oldenbarn, that I took nearly thirty specimens with my fingers, from the blossoms of *Chrysanthemum Leucanthemum*, on which they settled.

LEOMINSTER, July 24, 1835.

HENRY NEWMAN.

^a *Smynthurus* and *Thrips*.—ED.

THE
ENTOMOLOGICAL MAGAZINE.

OCTOBER, 1835.

ART. XXII.—*Wanderings in New South Wales, &c., being the Journal of a Naturalist.* In 2 Vols. By GEORGE BENNETT, Esq. F.L.S. London: Bentley. 1834.

In this most amusing work, the author confines himself to a simple narrative of his own observations, together with such comments as were made on the spot. He observes every object with the intelligent eye of a naturalist, and describes it without any attempt at effect: we may indeed say, that his style is *too* careless. We wish, also, Mr. Bennett had assisted us with more technical names of the objects he describes; such names might have appeared as foot notes, and thus situated, would have instructed the man of science, without annoying the more rapid mere-amusement reader. The value of the work may be imagined from our extracts, which we have not selected as in any way better than the average of the work, but as being strictly entomological. We commence with a notice of a larva, apparently Lepidopterous.

It attaches itself to the sprigs of shrubs; and, like the caddis worms, protects itself by a habitation from which it can protrude the anterior part of its body, being attached internally to its case by the tail, and by that means can feed and change its locality at pleasure, bearing its case with it, and re-attaching itself to any other place that may suit its habits. Thus I have had them moving about in my room, attaching themselves to one place, and then removing

to another; at first, much to my surprise at their power of mobility, until I saw it was effected by the protrusion of the larva from its habitation. The case is composed, internally, of a very tough web, and the exterior is covered by bits of twigs, interwoven upon it in a perpendicular direction: it suspends itself from the twig by a strong cluster of filaments. I have found this larva inclosed in its case, of various sizes, from three to six inches; this has led me to conclude that, like the caddis worms, they increase in size in the larva state, enlarging their habitations as the former ones become too small for the increased size of their bodies. I found, by cutting one of the cases open, that they readily repair any injury their dwellings may have sustained; for a few hours only elapsed, after I had made the incision to view the inclosed larva, [when] I found the case restored as firmly as before.—Vol. I. p. 67.

The following fact of a species of lobster, burrowing deep in mud, is new to us:—

In the river there is a small and new species of lobster, which is also procured in large quantities from the muddy ponds on the Yas Plains: they are delicious eating, and are taken readily, by placing a piece of raw meat on a bent pin. When one is felt at the bait, it is to be dragged gently to the margin of the pond (which is very muddy, but not deep), and taken on the back by the hand. A number can thus be caught in a short time. The aborigines call them *Murugonan*. They burrow deep in the mud, and the blacks capture them by thrusting the hand into the holes, and dragging them out, although they often extend to such a depth that the whole length of the arm is inserted before the animal is secured. The ponds in which the lobsters are taken are always full of water, being supplied by springs: one of them was about fifty yards in length by twenty in breadth, but of no great depth at any part. They form a chain along the plains during the dry season of the year; but, during heavy rains, they unite into a running stream, which empties itself into the Yas river. It is only at the season when there is merely a chain of ponds or swamps that the lobsters can be caught with facility. In the Murrumbidgee, Yas, Tumat, and other large rivers, there is a different, and larger species of lobster, which is frequently found in the stomachs of the river cod. This kind is called *Mungola* by the aborigines, and they are captured measuring a foot and a half in length, and weighing three or four pounds. I examined a small one captured in the Murrumbidgee, at Jugiong. The colour of the upper surface of the shield was dark-green, with reddish tinges on the sides, the rings of the tail studded

with short thick spines, and similar, but smaller spines, on the sides of the shield ; the spines and claws were white ; the legs having been pulled off by the blacks, to prevent their escape during the time they were employed in catching others, I could not ascertain their colour. They are found under the large stones in the rivers, and are taken by the hand when the rivers are low. The natives usually seek for them in the evening, or at night, by torch-light, and say it is difficult to get them during the day-light. In March, the season commences at Sydney, for cray-fish, which are caught in large quantities, and of enormous size, about the sea-coast, and are hawked about the streets at a cheap rate ; therefore, in this colony, cray-fish abound in the sea, and lobsters in the river.—Vol. I. p. 214.

The following notice of the *Cicadæ* is interesting :—

As the summer season was now fully set in, the previous silence of the woods was broken by the incipient, shrill, chirping noises, which resounded over them, occasioned by the male *Tettigoniæ*, or tree-hoppers, emerging from the larva to the winged state ; the cases [which] the fly had left being seen on almost every tree or post. This genus is remarkable for the instrument with which it cuts grooves in the wood for the purpose of depositing its eggs. The musical organs, or drums, are only found in the males, and are equally interesting. The best published account respecting them is that by Réaumur. The aborigines call these insects *Gulang galang*, and formerly used them as food, first stripping off their wings. They ate them in the raw state ; that is, as the native blacks told me, "When no white feller here, no black feller get bread or yam." My notice was particularly directed by the natives to the drums in the male insects, as the means by which they produced their thrilling sounds : at the same time adding, in their peculiar English, "Old woman *Galang galang* no got, no make a noise ;" implying that the females do not possess these musical instruments. There are several species of this genus known in Australia. During rain, these insects are silent, but recommence their clamour on the appearance of fine weather.—Vol. I. p. 237.

We now proceed to the account of the Bugong moths, a remarkable example of the gregarious propensity of insects. Most of our readers will recollect Réaumur's history of countless myriads of *Ephemeræ*, and various instances of similar multitudes of locusts and other insects. Captain Cook tells us, that at Thirsty Sound, on the coast of New South Wales,

every branch and twig, for several acres, was covered with a species of butterfly, and the air was so crowded with them, that millions might be seen in every direction. And Captain King, as quoted by our author, observes: "Here, (Cape Cleveland,) as well as at every other place that we had landed upon within the tropic, the air is crowded with a species of butterfly, a great many of which were taken. It is, doubtless, the same species which Captain Cook remarks as so plentiful in Thirsty Sound. The numbers seen by us were indeed incredible; the stem of every grass-tree (*Xanthorrhœa*), which plant grows abundantly upon the hills, was covered with them; and, on their taking wing, the air appeared, as it were, in perfect motion. It is a new species, and is described by my friend, Mr. W. S. Mac-Leay, under the name of *Euplaea hamata*."—(*Survey of the Coast of Australia*, Vol. I. p. 195.)

In England we have occasionally seen gnats and ants almost equally numerous; and in northern countries, the cruel mosquito is no less abundant. But we must proceed with the account of the *Bugongs*.

Near this station is a lofty table-mountain, rising above numerous wooded hills, varying in their degrees of elevation: it forms the commencement of a mountainous range, extending in a south-west direction. It is named the Bugong mountain, from the circumstance of multitudes of small moths, called *Bugong* by the aborigines, congregating, at certain months of the year, about masses of granite on this and other parts of the range. The months of November, December, and January, are quite a season of festivity among the native blacks, who assemble from far and near to collect the *Bugong*; the bodies of these insects contain a quantity of oil, and they are sought after as a luscious and fattening food. I felt very desirous of investigating the places where these insects were said to congregate in such incredible quantities, and availed myself of the earliest opportunity to do so.—Vol. I. p. 266.

Mr. Bennett was prevented by the weather from ascending the mountain till the 12th of December. Part of the ascent was made on horseback, the remainder on foot: at last he arrived at the summit of the mountain, composed of enormous masses of granite.

This was the first place where, upon the smooth sides or crevices of the granite blocks, the *Bugong* moths congregated in such incre-

dible numbers; but from the blacks having recently been here, we found but few of the insects remaining. . . . At last, we arrived at another peculiar group of granite rocks, in enormous masses, and of various forms; this place, similar to the last, formed the locality where the Bugong moths congregate, and is called *Warragong* by the natives. The remains of recent fires apprised us that the aborigines had only recently left this place for another of similar character a few miles further distant. . . . From the result of my observations, it appears that the insects are only found in such multitudes on these insulated and peculiar masses of granite; for about the other solitary granite rocks, so profusely scattered over the range, I did not observe a single moth, or even the remains of one. Why they should be confined only to these particular places, or for what purpose they thus collect together, is not a less curious than interesting subject of inquiry. Whether it be for the purpose of emigrating, or for any other particular cause, our present knowledge cannot satisfactorily answer.—Vol. I. p. 269.

This scarcely seems to us a subject for deep speculation: the eggs of Lepidopterous insects are deposited by thousands in one spot; the larvæ of many are gregarious; the pupæ change, and the moths appear in company. They probably select the granite, as affording a commodious footing, an exposure to the sun, a refuge from the sun, or a shelter from the wind or rain. Perhaps resembling the granite in colour, the similarity hides them from insectivorous birds; perhaps the smooth and perpendicular sides of the granite present an obstacle to insectivorous quadrupeds, which would otherwise devour them. We have no occasion to suppose that emigration, or any other unusual economy, is the object of their immense congregations; let us rather refer it to the simple operation of that heaven-born instinct which tends to the preservation of the unwitting object of its care, in every, even the most simple, propensity which it displays.

To procure them with greater facility, the natives make smothered fires underneath those rocks about which they are collected, and suffocate them with smoke, at the same time sweeping them off frequently in bushfulls at a time. After they have collected a large quantity, they proceed to prepare them, which is done in the following manner:—A circular space is cleared upon the ground, of a size proportioned to the number of insects to be prepared; on it a fire is lighted, and kept burning, until the ground is considered to

be sufficiently heated, when the fire being removed, and the ashes cleared away, the moths are placed upon the heated ground, and stirred about, until the down and wings are removed from them : they are then placed on pieces of bark, and winnowed, to separate the dust and wings mixed with the bodies ; they are then eaten, or placed into [in] a wooden vessel, called a *walbun* or *culibun*, (usually made from one of the knotty protuberances so commonly seen upon the trunks of the large *Eucalypti* trees,) and pounded by a piece of wood into masses or cakes, resembling lumps of fat, and may then be compared, in colour and consistence, to dough made from smutty wheat mixed with fat. The bodies of the moths are large, and filled with a yellowish oil, resembling in taste a sweet nut. These masses will not keep above a week, and seldom for that time ; but by smoking, they are able to preserve them for a much longer period. The first time this diet is used by the native tribes, violent vomitings, and other debilitating effects, are produced ; but after a few days, they become accustomed to its use, and then thrive and fatten exceedingly upon it. These insects are held in such high estimation, that they assemble from all parts of the country to collect them from these mountains. It is not only the native blacks that resort to the Bugong, but crows also congregate for the same purpose. The blacks (that is, the crows and aborigines), do not agree about their respective shares ; so the stronger decides the point ; for when the crows (called *Arabul* by the natives) enter the hollows of the rocks to feed upon the insects, the natives stand at the entrance, and kill them as they fly out, and afford them (*i.e.* the *crows* afford the *natives*) an excellent meal, being fat from feeding upon the rich Bugong. So eager are these feathered blacks, or Arabuls, after this food, that they attack it even while it is preparing by the natives ; but as the aborigines never consider any increase of food a misfortune, they lay in wait for the Arabuls with waddies or clubs, and kill them in great numbers, and use them for food.— Vol. I. p. 273.

Some of our younger readers may not have met with a history of the den-constructing spider. It has repeatedly been our own good fortune to see the singular residence of this creature.

There is a spider, which I frequently observed about Yas Plains, and also at other parts of the colony, which forms a den in the ground ; the opening is about an inch in diameter ; over this a lid is formed of web incorporated with earth, and a web hinge, accurately fitting the external aperture, which the animal can shut at pleasure.

I have heard of a person who was accustomed to feed one of these insects ; after feeding, it would enter the habitation, and shut down the lid, by drawing it close with one of its claws. It is nearly impossible to discover their habitations when the lid is closed, from its being so accurately fitted to the aperture.—Vol. I. p. 328.

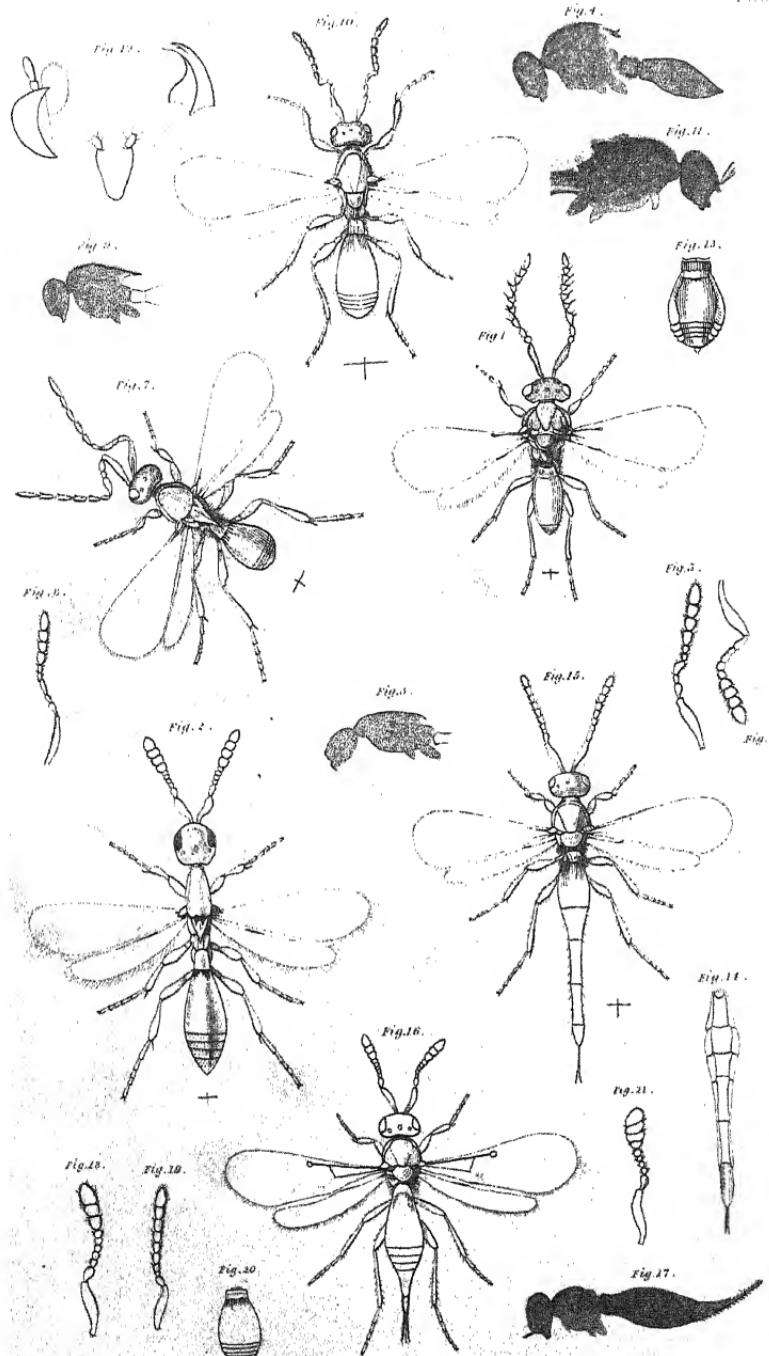
There is a passage relative to the King-crab, which we do not exactly understand. We understand the King-crab to be the genus *Limulus*; but if so, surely the author has mistaken the tail for the head. However, we will transcribe the passage, leaving our more learned readers to decide what animal is intended.

Observing an antenna of some crustaceous animal projecting from the moist sand left by the receding tide, I pulled it, and drew out two fine King-crabs, jointed together by their under surfaces, and thus united, burrow [? they had burrowed] in the sand. They are called *Ecan mimi* by the Javanese; but on this coast [Sumatra] they are named *Moi moi*. The male is larger than the female. They are eaten by the Javanese; but on this coast they are not eaten, although the natives observe the Chinese are fond of them. The females lay their eggs in the sand, after carrying them for some time, and in about the second month the young are produced: these animals are perfectly harmless; they crawl rapidly; and when touched, draw the upper part of the shell a little inwards; and as they move, the long antenna bears a resemblance to a tail. When placed on the back, they find much difficulty in regaining their natural position.—Vol. I. p. 400.

One quotation more, and we have done. The second volume lays temptingly before us, but we resist. We could not open it without meeting with some passage which we should wish to purloin. It abounds in portraits from the life,—sketches from nature. Therefore, gentle reader, we recommend thee to read Bennett's *Wanderings*; which, though not penned by a Waterton, though without the perfect finish, the exquisite style, of THE *Wanderings*, are nevertheless truth-breathing, original, and delightful; and being so, are surely worth the perusal of every naturalist. Every body knows the Hermit-crab, and therefore every body will understand the following:—

A great number of the *Paguri*, Hermit, or Soldier-crabs, of different sizes, were running about the beach: two large specimens

that I found had each taken possession of the *Dolium perdix*, or Partridge-shell, to which they were as firmly attached as if in their natural habitation. The crustaceous portions of these animals is of a beautiful lilac colour, the softer parts yellow, and the antennæ of a dark red colour. The natives call them by the general name of *Sepo*. The smaller kinds inhabit *Murices*, *Trochi*, *Neritæ*, *Helices*, *Lymneæ*, *Cerethii*, and the univalve shells. In some instances, I saw large shells of *Harpa*, &c. inhabited by very small animals of this kind, moving their heavy and cumbrous dwelling slowly, and with difficulty; there were some of a red, and others of a sea-green colour, but the larger were invariably of a beautiful lilac. May not this change of colour depend upon their age? The *Paguri* feed upon dead animals, fish, and all kinds of offal, as well as vegetable matter,—such as the skins of plantains, remains of cocoa-nuts, fruits, &c. I have often observed a number of these creatures, of various sizes, congregated about a dead and putrid fish: and it is ludicrous, on disturbing them in the midst of their feast, to see them marching away, jumbling and overturning one another in the hurry, causing a clattering noise to proceed from the collision of their burrowed [? borrowed] coverings; and should they not be able to escape capture, they draw themselves closely into the shell, closing the aperture so firmly, by closing the claws over the entrance, as to render it impossible to extract them without breaking the shell to pieces. Thus secured, they remain immovable, and apparently dead, and may be kicked or thrown about without giving any indications of life; but danger past, they emerge partly from the shell as before, and move briskly away. The natives use them occasionally, but rarely, as food. It is not an improbable supposition, that the ova of these curious crustaceous animals are deposited in the empty shells lying upon the beach; and the changes these *crustacea* undergo is one of the most interesting subjects of investigation which could engage the attention of a practical naturalist. It is a curious fact, that no matter whatever form the univalve shell may have, the posterior or soft parts of the animals inhabiting it are accommodated to it, thus causing persons not accustomed to observe the changes of natural objects, to regard this as an original inhabitant, and it is sometimes difficult to persuade them of the reverse; the posterior portion of the animal being naked, and the anterior crustaceous, the former evidently requires some protection.—Vol. I. p. 404.



ART. XXIII.—*On the Species of Platygaster, &c.* By
FRANCIS WALKER.

THE *Oxyurites* or *Proctotrupites*, a tribe of parasitic *Hymenoptera*, of which this family forms a part, are an extensive group, and have a greater variety of structure than the *Chalcidites* or *Ichneumonites*, though inferior in number, and less attractive, from their usual black colour and minute size. They are distinguished by the shape of the ovipositor, which is flexible, retractile, and tubiform, like that of the *Chrysites*. They have most affinity to the *Cynipites*, but these are at once known by the peculiar conformation of the wing-nervures.

In this family, as in *Scelio* and *Teleas*, and some other genera, the segments of the abdomen above form a rim around those below. The wing nervures are very generally obsolete; but in some species a single nervure proceeds from below the border, and ends in a round dot before the middle of the wing, and in two instances is forked.

The two groups into which they have been divided by the form of the scutellum, may also be generally distinguished from each other by several other slight differences. The first group, comprising the species with the scutellum more or less lengthened and pointed behind, has the body generally hairy, the female antennæ clubbed, the thorax smooth and shining, the abdomen of the female varying much in form, the second segment with two impressions at the base, the wings often fringed: while in the second group, or the species having the scutellum formed as a tubercle, the body is seldom hairy, the tips of the antennæ are very slightly dilated, the thorax is punctured, the abdomen has usually the same shape in both sexes, with the second segment furrowed at the base, and the wings are seldom fringed.

The sexes are often alike in shape, but the males may be easily distinguished from the females by their antennæ, in which the fourth joint is much more developed, and the tenth joint longer, and more pointed.

The colour is generally black, that of the legs and antennæ

often red; the wings are iridescent and pubescent. They run swiftly, with their antennæ incessantly vibrating, and are found on trees, but more often among grass in fields and woods, during the summer and autumn. They destroy the minute *Diptera* (*Cecidomyia*, &c.) that infest the corn, grasses, and other plants. These, while in the grub state, reside within the inmost recesses of the florets, and the *Platygaster* would be unable to reach to them were not its abdomen often very long and slender, and flexible towards the tip; it has also a very long hair-like ovipositor concealed within the abdomen when not in action.

In the fourth and fifth volumes of the Linnean Transactions is a long and interesting account of *Tipula* (*Cecidomyia*) *Tritici*, by Kirby, who also describes three minute species of *Hymenoptera*, that he found on the ears of wheat.

The first of these *Ichneumon* (*Platygaster*) *Tipulæ*, lays its eggs in the grubs of *C. tritici*. He did not clearly ascertain the history of the second, but he suspected it to be parasitic on the eggs of the same fly; the third, *Ichneumon* (*Macroglenes*) *penetrans*, belongs to the *Chalcidites*.

In the first volume of the Entomological Magazine there is an excellent methodical arrangement of these and other minute *Hymenoptera*, by Mr. Haliday; who, by the loan of his MSS. and collection, contributed much of the following descriptions:—

Caput breve, transversum, mediocre, thoracis plerunque latitudine, postice concavum: mandibulæ arcuatæ, apice bidentatae: maxillæ subtrigonæ, paullulum arcuatæ, lobo terminatæ ovato externe piloso; palpi biarticulati, articulus 1^{us}. brevis, 2^{us}. longus apice setis duabus armatus: labium obconicum: ligula brevis, lata; palpi uniarticulati, breves, apice setis duabus armati: oculi laterales, minimi: ocelli supra verticem trigone dispositi: antennæ 9- aut 10-articulatae, geniculatae, moniliformes, vibrantes, corporis longitudine aut breviores, vix pubescentes; articulus 1^{us}. linearis aut subfusiformis, longitudine triens: thorax antice et postice angustior: prothorax minimus, supra brevissimus, utrinque longior; mesothoracis scutum maximum, parapsides subtrigonæ postice latiores: paraptera trigona: scutelli abdominisque structura varia; hujus segmenta dorsalia utrinque aciem fingentes segmentorum ventralium margines amplectentem: oviductus et ejus vaginæ 2 laterales longa, gracillima, flexilia, in abdomen dum

quietem agunt recepta: pedes subæquales, mediocres, parœ pubescentes; coxæ mediocres; femora clavata; tibiæ sub-clavatae, apice spinis armatae, metatibiæ longiores, protibiæ spina bifida majore armatae; tarsi longi, graciles; articuli 1^o. ad 3^{um}. aut 4^{um}. longitudine decrescentes; 4^{us}. aut 5^{us}. præcedente longior; protibiæ breviores crassiores; ungues minuti, distincti; pulvilli longi: alæ subtilissime pubescentes, iridescentes, sæpe ciliatae; squamulæ magnæ, nitidæ; os basale crassum, longum: proalæ nonnunquam nervus basalis puncto terminatus et rarissime nervulum demittens recte declivem; metalæ ante medium stigma costale setis 5 hamatis armatum.

Feminæ plerunque abdomen latius aut longius et acutius, antennæ breviores et apice crassiores, alæ angustiores.

**Tarsi pentameri.*

GENUS I.—PLATYGASTER, *Latreille*.

Platygaster, *Latreille*, *Curtis*, *Haliday*, *Nees ab Essenbeck*.
Scelio, *Latreille*. *Ichneumon*, *Kirby*.

Alarum nervi obsoleti.

**Thorax compressus.*

1. *Fem.*—Corpus longum, angustum: antennæ clavatae, ejus dimidio vix longiores; articulus 2^{us}. ovatus, mediocris; 3^{us}. et sequentes ad 6^{um}. minimi; 7^{us}. et sequentes lati; 10^{us}. 9^o. paullo longior: thorax longi-ovatus, compressus, quasi galeatus, capite multo angustior: mesothoracis parapsidum suturæ vix conspicuæ; scutellum compressum, apice subarcuatum, acuminatum, metathoracem non transiens: abdomen longi-ovatum, fere planum, thorace latius et paullo longius; segmentum 1^{um}. breve; 2^{um}. dimidium occupans; 3^{um}. et sequentia brevia, subæqualia.

Sp. 1. Plat. Catillus. Fem. *Ater*, *antennæ piceæ*, *pedes picei aut rufi*, *tarsi flavi*, *alæ limpidæ*.

Ater, nitens, lœvis, glaber: oculi ocellique nigro-picei: antennæ piceæ; articuli 3^o. ad 6^{um}. pallidiores: metathorax abdominisque segmentum 1^{um}. scabra, obscura: pedes picei; coxæ nigro-piceæ; tibiæ rufo-piceæ, basi rufæ; tarsi flavi, apice picei: alæ limpidæ, angustæ; squamulæ piceæ. (Corp. long. lin. 1; alar. lin. 1¹/₂.)

Var. β.—Antennæ nigro-piceæ; articuli 1^{us}. subtus, 2^{us}. et 10^{us}. apice picei: coxæ, trochanteres et femora nigra; pro- et mesotibiæ flavæ, supra piceo vittatæ; metatibiæ piceæ.

Var. γ.—Antennæ articulo 2^o. rufo-piceo.

Var. δ.—Antennæ articulo 1^o. rufo: pedes rufi; coxæ piceæ; tarsi flavi, apice fusci.

Var. ε., *Var. δ.*, similis: metafemora et metatibiae apice picea.

June; on grass beneath trees; near London. New Forest, Hampshire. Mr. Haliday has found it under the shade of trees, once at Holywood, and once in Galway, Ireland.

***Thorax non compressus.*

**Scutellum productum.*

†*Scutellum valde productum, spiniforme, abdomen attingens.*

2. *Mas.*—Antennæ filiformes, corporis fere longitudine; articulus 2^{us}. ovatus; 3^{us}. minimus; 4^{us}. magnus, longus, sublinearis; 5^{us}. parvus, ovatus; 6^{us}. et sequentes majores, fusiformes, subæquales; 10^{us}. linearis, acuminatus, 9^o. longior: thorax ovatus, convexus: mesothoracis parapsidum suturæ vix conspicuæ: abdomen brevi-ovatum, thorace vix longius; segmentum 1^{um}. seorsum angustum, longum; 2^{um}. maximum; 3^{um}. et sequentia minima.

Fem.—Antennæ subclavatae, corporis dimidio longiores; articulus 2^{us}. cyathiformis; 3^{us}. minimus; 4^{us}. et 5^{us}. mediocres; 6^{us}. minor; 7^{us}. et sequentes majores, lati, subæquales; 10^{us}. acuminatus, 9^o. longior.

Sp. 2. Plat. Tipulæ. *Mas* et *Fem.* *Ater*, *antennæ rufæ apice nigræ aut piceæ, pedes rufi fusco cingulati, alæ sublimpidæ.*

Ichneumon Tipulæ. Kirby, Linn. Trans. IV. 232; V. 108; tab. 4. figs. 8, 9; *Stew.* II. 231; *Turt.* III. 476.

Mas.—Ater, nitens, fere lœvis, parce et breviter pubescens: caput subtilissime punctatum, parum nitens: oculi ocellique nigro-picei: antennæ piceæ; articuli 1^o. ad 5^{um}. rufi: scutellum apice fuscum; metathorax et abdominis segmentum 1^{um}. scabra, obscura, pilosa: abdomen lœve, glabrum; segmentum 2^{um}. basi bifoveolatum: pedes pallide rufi; metatibiæ tarsique apice picea: alæ sublimpidæ; squamulæ piceæ.

Fem.—Antennæ piceæ; articulus 1^{us}. rufus; 7^{us}. et sequentes nigri: coxæ piceæ; mesofemora et mesotibiæ apice picea; metafemora et metatibiæ apice nigro-picea; tarsi apice pallide fusti. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Var. β.—*Fem.* antennæ articulis 2°. ad 6^{um}. rufo-piceis, 7°. ad 10^{um}. nigro-piceis.

Var. γ.—*Fem.* antennæ articulis 7°. ad 10^{um}. piceis: pedes pallide rufi; meso- et metapedum coxæ omnino, femora et tibiæ tarsique omnes apice pallide picea.

Var. δ., *Fem.* *Var. γ.*, similis: propedum femora et tibiæ apice pallide picea.

Var. ε., *Fem.* *Var. γ.*, similis: mesopedum femora et coxæ omnino rufa.

Mr. Haliday has found the female on *Cerealia*, in England, Ireland, and Scotland; the male only once on a rose-tree. The former is common on grass in fields near London, in June and July.

Sp. 3. Plat. Nydia. Fem. P. Tipulæ *simillimus*, alæ fuscæ.

Ater, nitens, laevis, parce et breviter pubescens: caput supra subtilissime punctatum, parum nitens: oculi ocellique nigro-picei: antennæ rufo-piceæ, capite thoraceque longiores; articulus 1^{us}. rufus; 7^{us}. et sequentes nigri: scutellum apice rufum: metathorax abdominisque segmentum 1^{um}. scabra, obscura, pilis albis utrinque hirta: abdomen segmento 2°. ad apicem glabrum, thorace latius, fere rotundum: pedes rufi; coxæ et metatibiæ apice nigro-piceæ; femora necon pro- et mesotibiæ fusco maculata; tarsi pallidiores, apice fusci; metafemora apice picea: alæ fuscae, ciliatæ; squamulæ piceæ. (Corp. long. lin. $\frac{3}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Pro- et mesotibiæ femoraque immaculata.

June; Windsor Forest.—July; on grass in fields; near London.

Sp. 4. Plat. Laodice. Fem. P. Tipulæ *minor*, *abdomen longius*, alæ angustiores limpidae.

Ater, nitens, fere laevis, parce et breviter pubescens: caput subtilissime punctatum, parum nitens: oculi ocellique nigro-picei: antennæ piceæ; articulus 1^{us}. basi pallide rufus; 7^{us}. et sequentes nigri: scutellum apice fuscum: metathorax et abdominis segmentum 1^{um}. scabra, obscura, pilosa: abdomen laeve, glabrum;

segmentum 2^{um}. basi bifoveolatum : pedes rufi ; femora, tibiæ et tarsi apice picea : alæ limpidæ ; squamulæ piceæ. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{1}{2}$ — $\frac{2}{3}$.)

Var. β.—Antennæ articulis 7°. ad 10^{um}. nigro-piceis : procoxæ pallide rufæ.

Var. γ.—Antennæ articulo 1°. omnino rufo : profemora et protibiæ omnino rufa.

Var. δ., *Var. γ.*, similis : meso- et metapedum femora et tibiæ apice nigro-picea.

Var. ε.—Antennæ rufæ ; articuli 7°. ad 10^{um}. picei : pedes rufi ; meso- et metafemora metatibiæque apice picea ; pro- et mesotibiæ piceo cingulatæ.

Var. ζ., *Var. ε.*, similis : femora omnia necnon pro- et mesotibiæ rufa.

Var. η.—Pedes omnino rufi.

June ; on grass in fields ; near London.

3. *Mas.*—Antennæ subclavatae, corporis dimidio longiores ; articuli 3^{us}. et 5^{us}. parvi ; 4^{us}. paullo major ; 6^{us}. et sequentes majores, longi-ovati, æquales ; 10^{us}. acuminatus, 9°. longior : thorax ovatus, convexus : mesothoracis parapsidum suturæ vix conspicuae : abdomen ovatum, thorace longius ; segmentum 1^{um}. seorsum angustum, longum ; 2^{um}. maximum ; 3^{um}. et sequentia minima.

Sp. 5. Plat. Nice. *Mas. Rufus, alæ subfuscæ.*

Rufus, semipellucidus, nitens, fere lœvis, parce pubescens : caput fuscum, postice rufum : oculi ocellique nigro-picei : antennæ fuscæ ; articuli 1°. ad 3^{um}. pallide rufi : mesothoracis scuti discus et mesoscutellum basi fusca ; metathorax abdominisque segmentum 1^{um}. scabra, obscura, pubescentia : metathoracis postscutellum optime distinctum, convexum, petioli partem anteriorem fingens : abdomen lœve, glabrum : pedes pallide rufi ; tarsi apice obscuriores : alæ subfuscæ ; squamulæ rufæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1 $\frac{1}{4}$.)

June ; on grass beneath trees ; near London.

†† *Scutellum productum, compressum, acuminatum, abdomen non aut vix attingens.*

4. *Fem.*—Antennæ clavatae ; articulus 2^{us}. longi-cyathiformis ; sequentes ad 6^{um}. minimi ; 3^{us}. et 4^{us}. lineares ; 5^{us}. et 6^{us}.

rotundi ; 7^{us}. et sequentes latissimi, approximati, æquales ; 10^{us}. ovatus, 9^o. longior : thorax ovatus : scutellum fere trigonum, abdomen non attingens : metathorax brevissimus : abdomen thorace multo longius, postice attenuatum, supra teliforme, oblique quasi obcapitatum ; segmentum 2^{um}. ejus trientem occupans ; 1^{um}. et 3^{um}. brevissima ; 4^{um}. multo longius ; 5^{um}. 4^o. longius ; 6^{um}. adhuc longius, acuminatum ; segmentum 2^{um}. ventrale subtus valde dilatatum, circulum fingens.

Sp. 6. Plat. Osaces. Fem. *Ater, antennæ piceæ apice nigræ, pedes rufo-picei, alæ limpidæ.*

Ater, nitens, lœvis, glaber : oculi ocellique nigro-picei : antennæ piceæ, corporis dimidio breviores ; articuli basi et subtus pallidiores ; 7^{us}. et sequentes nigri : mesothoracis parapsidum suturæ vix conspicuæ : abdomen thorace vix triplo longius ; segmentum 1^{um}. et metathorax scabra, obscura, pilis albis dense hirta : pedes picei ; femora et tibiæ basi rufa ; protibiæ rufæ, piceo cingulatæ ; tarsi pallide rufi, apice picei : alæ limpidæ ; discus subfuscus ; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{5}{4}$.)

Var. β.—Metafemora omnino nigra.

September ; on grass in fields ; near London. Found once in September on willows at Holywood, in Ireland, by Mr. Haliday.

Sp. 7. Plat. ventralis. Fem. *Ater, pedes rufo-picei, alæ fuscæ.*

Epimeces ventralis . . Westwood, Loudon's Mag. Nat. Hist.
Vol. VI. No. XXXV. p. 421.

Ater, parum nitens, subtilissime punctatus, parce pubescens : oculi ocellique nigro-picei : antennæ nigræ, corporis dimidiis vix longitudine ; articulus 1^{us}. piceus, subtus rufus : mesothoracis parapsidum suturæ bene determinatae : scutellum, metathorax, abdominis segmentum 1^{um}. omnino 2^{um}. que basi pilis albis dense hirta ; hoc basi quoque bifoveolatum : abdomen lœve, glabrum, thorace vix duplo longius ; segmenta 3^o. ad 6^{um}. nisi ad apices subtilissime punctata, vix nitentia : oviductus flavus : pedes nigro-picei ; trochanteres, femora et tibiæ basi rufa ; tarsi rufi, apice picei ; propedes pallidiores, tibiis rufis piceo cingulatis : alæ fuscæ, basi sublimpidæ ; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$ — $\frac{5}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Antennæ articulis 2°. ad 6^{um}. piceis : protibiae subtus rufæ.

Var. γ.—Antennæ articulo 1°. omnino piceo.

July ; on grass in fields ; near London.

5. *Fem.*—Antennæ clavatae ; articulus 2^{us}. longi-cyathiformis ; sequentes ad 6^{um}. minimi, 3^{us}. et 4^{us} lineares, 5^{us}. et 6^{us}. rotundi, 7^{us}. et sequentes latissimi, approximati, æquales ; 10^{us}. ovatus, 9°. longior : thorax ovatus : mesothoracis parapsidum suturæ conspicuae ; scutellum fere trigonum, abdomen non attingens : metathorax brevissimus : abdomen teliforme, thorace multo longius, postice attenuatum ; segmentum 1^{um}. brevissimum ; 2^{um}. longi-ovatum, abdominis triente paullo brevius ; sequentia angusta, longa ; 4^{um}. 3°. multo longius ; 5^{um}. adhuc longius ; 6^{um}. 4°. brevius, acuminatum.

Sp. 8. *Plat. Craterus. Fem. Ater, antennæ nigro-piceæ, pedes piceo rufi, femora nigra, alæ limpidæ.*

Ater, subnitidus, laevis, fere glaber : oculi ocellique nigro-picei : antennæ nigro-piceæ, corporis dimidio breviores ; articulus 1^{us}. basi 2^{us}. que apice pallidiores : metathorax abdominalisque segmentum 1^{um}. scabra, obscura, pilosa ; 2^{um}. nitidum, glabrum ; sequentia subtilissime punctata, obscura ; pedes nigri ; femora basi et trochanteres picea ; tibiae rufæ, apice supra pallide piceæ ; metatibæ apice nigro-piceæ ; tarsi pallide rufi, apice picei : alæ limpidæ, albæ ; squamulæ piceæ. (Corp. long. lin. $\frac{5}{6}$; alar. lin. 1.)

Var. β.—Metatarsi supra piceo-rufi.

Var. γ.—Metatibiae apice pallide piceæ.

Var. δ.—Antennæ articulo 1°. obscure rufo.

July ; on grass in fields ; near London.

6. *Mas.*—Antennæ filiformes ; articulus 2^{us}. longi-cyathiformis ; 3^{us}. minutus ; 4^{us}. magnus, 3°. approximatus ; 5^{us}. paullo minor ; 6^{us}. mediocris ; sequentes latiores, æquales ; 10^{us}. acuminatus, 9°. longior : thorax ovatus : scutellum abdomen non attingens : abdomen longi-ovatum.

Fem.—Antennæ clavatae ; articuli 3^{us}. et 4^{us}. parvi, angusti, lineares ; 5^{us}. et 6^{us}. cyathiformes, breviores, non latiores ; 7^{us}. et sequentes multo latiores, subæquales ; 10^{us}. 9°. paullo longior : abdomen seorsum convexum et acutum, thorace dimidio longius.

Sp. 9. Plat. Sosis. Mas et Fem. *Ater, antennæ piceæ, pedes rufo-picei, alæ fuscæ.*

Mas.—Ater, nitens, lœvis, parce albo-hirtus : caput obscurum, punctatum : oculi obscure picei : mandibulæ rufæ : antennæ piceæ, corporis dimidio multo longiores ; articulus 1^{us}. rufus, supra apice piceus ; 2^{us}. apice rufus : mesothoracis parapsides scuto in unum confusæ ; scutellum cultriforme, metathoracem non transiens, apice fuscum : metathorax et abdominis segmentum 1^{um}. scabra, obscura, utrinque albo dense hirta ; segmentum 2^{um}. maximum, glabrum ; 3^{um}. et sequentia brevia : pedes obscure picei ; femora et tibiæ basi, trochanteres et tarsi pallide rufa, hi apice picei ; propedum femora et tibiæ obscure rufa ; tarsi fulvi, apice picei : proalæ fuscæ, angustæ, basi necnon metalæ omnino sublimpidæ ; squamulæ piceæ.

Fem.—Antennæ subclavatæ, corporis dimidio paullo longiores ; articulus 1^{us}. fusca, basi rufus ; 7^{us}. et sequentes nigro-picei : abdomen conicum, acuminatum, thorace dimidio longius ; segmentum 2^{um}. ejus dimidium occupans ; 3^{um}. brevissimum ; 4^{um}. 3°. paullo longius ; 5^{um}. adhuc longius ; 6^{um}. 5°. duplo fere longius, acuminatum : oviductus flavus : coxæ nigræ ; femora et tibiæ nigro-picea, basi rufa ; profemora et protibiæ picea, basi rufa. (Corp. long. lin. $\frac{1}{3}$ — $\frac{2}{3}$; alar. lin. $\frac{1}{2}$ —1.)

Var. β.—*Mas.* mesofemora rufo-picea ; mesotibiæ rufæ, piceo cingulatæ.

Var. γ.—*Mas.* antennæ articulis 1°. et 2°. piceis, ille basi rufus.

Var. δ.—*Mas.* antennæ articulis 1°. et 2°. pallide fuscis, hic apice et ille basi rufi.

Var. ε., *Mas.* *Var. γ.* similis : profemora rufo-fusca.

Var. ζ.—*Mas.* antennæ articulis 3°. ad 7^{um}. obscure rufis.

Var. η.—*Mas.* antennæ rufo-piceæ ; articuli 1^{us}. basi 2^{us}. que flavi.

Var. θ.—*Fem.* tarsi omnes flavi, apice picei.

Var. ι., *Fem.* *Var. θ.* similis : protibiæ rufæ, fusco cingulatæ.

May to August ; on grass in fields ; near London. Found by Mr. Haliday on willows, at Holywood, in Ireland.

Sp. 10. Plat. Rhanis. Fem. *Ater, pedes rufo-fusci, alæ sublimpidæ.*

Ater, obscurus, subtilissime punctatus, parce pubescens : oculi ocellique nigro-picei : antennæ nigræ ; corporis dimidio paullo longiores : articulus 1^{us}. basi fuscus : mesothoracis parapsidum

suturæ vix conspicuæ : scutellum, metathorax et petiolus dense albo-hirta : abdomen nitidum, læve, glabrum ; segmentum 2^{um}. ejus dimidio longius ; 3^{um}. 4^{um}. et 5^{um}. brevia ; 6^{um}. multo longius : pedes picei ; coxae nigrae ; tibiæ basi et propedum femora tibiæque omnino piceo-rufa ; tarsi rufi, apice picei ; metatarsi picei ; articulus 1^{us}. basi rufus : alæ sublimpidæ ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{4}$.)

Var. β.—Femora nigra ; profemora picea ; metatarsi rufi, apice picei.

June ; on grass in fields ; near London. Isle of Wight.

Sp. 11. Plat. Myles. Fem. *Abdomen quam hujus sectionis præcedentibus brevius.*

Ater, nitens, lævis, fere glaber : caput thorace latius : oculi nigro-picei : antennæ nigro-piceæ, corporis dimidii vix longitudine ; articulus 1^{us}. basi flavus : thorax angustus : mesothoracis parapsides scuto in unum confusæ : scutellum abdomen non attingens, apice fuscum : metathorax abdominisque segmentum 1^{um}. pilis albis dense hirta : abdomen ovatum, nitidissimum, thorace latius vix longius : pedes nigro-picei ; trochanteres pallidiores ; tibiæ basi rufæ ; tarsi rufi, apice picei ; protibiæ rufæ, supra fusco vittatae : alæ albo-limpidæ, angustæ ; squamulæ piceæ, optime determinatae. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Var. β.—Protibiæ piceæ, apice subtus rufæ.

Found at Holywood, in Ireland, by Mr. Haliday.

7. *Mas.*—Antennæ filiformes ; articulus 2^{us}. parvus, subrotundus ; 3^{us}. minimus ; 4^{us}. magnus, dilatatus, 3°. approximatus ; 5^{us}. parvus ; 6^{us}. et sequentes magni, longi-ovati, discreti, subæquales ; 10^{us}. acuminatus, 9°. paullo longior : thorax longi-ovatus, angustus, utrinque abrupte declivis : mesothoracis parapsidum suturæ vix conspicuæ ; scutellum abdomen non attingens : metathorax abdominisque segmentum 1^{um}. bene determinata : abdomen longi-ovatum, apicem versus latius ; segmentum 2^{um}. ejus plus dimidium occupans ; 3^{um}. et sequentia brevia, subæqualia.

Sp. 12. Plat. Seron. *Mas.* Ater, antennæ nigro-piceæ, pedes rufi, metapedum femora et tibiæ apice picea, alæ subfuscæ.

Ater, longus, gracilis, nitidus, lævis, parce pubescens : antennæ nigro-piceæ, corpore paullo breviores ; articulus 1^{us}. rufus : oculi ocellique nigro-picei : metathorax abdominisque segmentum 1^{um}.

punctata, parum nitida, utrinque pubescentia; segmenta 2^{um}. et sequentia glabra: pedes rufi; coxae, metasemora, metatibiæ tarsique apice picea: alæ subfuscæ; squamulæ rufo-piceæ. (Corp. long. lin. 1; alar. lin. 1½.)

September; on grass in fields; near London.

Sp. 13. Plat. Mamertes. Mas. *Præcedenti simillimus, antennæ breviores, alæ albo-limpidæ.*

Mas.—Ater, nitens, lævis, fere glaber: caput thorace latius: oculi nigro-picei: antennæ nigræ, corpore breviores; articulus 1^{us}. basi piceus: abdomen cochleatum, thorace longius et latius: pedes nigri; tibiæ basi piceæ; protibiæ subtus apice tarsique flava, hi apice picei: alæ albo-limpidæ, postice ciliatæ; squamulæ nigro-piceæ. (Corp. long. lin. ¾; alar. lin. 1.)

Found in September, on willows, in Kent; and at Holywood, in Ireland, by Mr. Haliday.

Fem.?—Caput thorace vix latius: antennæ clavatae, corporis dimidii longitudine; articulus 1^{us}. subfusiformis; 2^{us}. longi-cyathiformis; sequentes parvi, 3^{us}. et 4^{us}. lineares, 5^{us}. et 6^{us}. rotundi; 7^{us}. et sequentes lati: thorax ovatus, convexus: abdomen obclavatum, thorace fere duplo longius; segmentum 1^{um}. et metathorax pilis albis utrinque hirta; 2^{um}. ovatum, postice angustius; sequentia obscura, quasi telum fingentia; 3^{um}. mediocre; 4^{um}. multo longius; 5^{um}. adhuc longius; 6^{um}. 3^l. longitudine: trochanteres et tibiæ piceæ, hæ basi flavæ; protibiæ flave, apice supra fusco maculatæ. (Corp. long. lin. 1; alar. lin. 1½.)

Found in September, on willows, at Holywood, in Ireland, by Mr. Haliday.

8. Fem.—Corpus crassum, breve: antennæ capitatae; articulus 2^{us}. cyathiformis; 3^{us}. et 4^{us}. parvi, angusti, lineares; 5^{us}. et 6^{us}. cyathiformes, breviores, non latiores; 7^{us}. et sequentes multo latiores, subæquales; 10^{us}. 9°. paullo longior: thorax brevi-ovatus: mesothoracis parapsides scuto in unum confusæ; scutellum abdomen attingens: metathorax et abdominis segmentum 1^{um}. brevissima: abdomen piriforme, arcuatum, vix acuminatum, thorace paullo longius; segmentum 2^{um}. ejus dimidium occupans, ovatum, latum; sequentia abrupte angustiora; 3^{um}. et 4^{um}. brevia; 5^{um}. et 6^{um}. paullo longiora; segmentum 2^{um}. ventrale subtus valde dilatatum.

Sp. 14. Plat. Tarsa. Fem. *Ater, antennæ piceæ apice nigrae, pedes piceo rufi nigro cingulati, alæ limpidae.*

Ater, subnitidus, subtilissime punctatus, parce pubescens: caput obscurum: oculi ocellique nigro-picei: antennæ piceæ, corporis dimidio longiores; articulus 1^{us}. rufus, apice supra piceus; 7^{us}. et sequentes nigri: metathorax et abdomen basi dense albo-hirta: abdomen nitidum, læve, glabrum; segmenta 3^{um}. et 4^{um}. apice, 5^{um}. et 6^{um}. omnino punctata, obscura: pedes rufi; coxæ et femora omnino tibiæque apice nigra; profemora et protibiæ rufo-picea; tarsi pallide rufi, apice picei: alæ limpidae; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

August; on grass in fields; near London.

9. *Mas.* — Antennæ filiformes; articulus 2^{us}. cyathiformis; 3^{us}. minutus; 4^{us}. magnus, 3°. approximatus; 5^{us}. mediocris; 6^{us}. et sequentes longi-ovati, latiores, discreti, æquales; 10^{us}. acuminatus, 9°. longior: thorax ovatus: mesothoracis parapsides scuto in unum confusæ; scutellum abdomen attingens: metathorax abdominisque segmentum 1^{um}. brevissima: abdomen ovatum; segmentum 2^{um}. ejus dimidio longius; sequentia brevia, subæqualia.

Fem. — Antennæ clavatæ; articuli 3^{us}. 5^{us}. et 6^{us}. parvi, subrotundi; 4^{us}. angustus, linearis; 7^{us}. et sequentes magni, lati, breves, subæquales: scutellum longius: abdomen convexus, apice acuminatum et fere attenuatum.

Note. — *Platygaster decurvatus* *Ess. Monogr.* may be placed here.

Sp. 15. Plat. Jasius. *Mas et Fem. Ater, antennæ nigro-piceæ, pedes rufo-picei, alæ subfuscæ.*

Mas. — *Ater*, parum nitens, subtilissime punctatus, parce pubescens: oculi ocellique picei: antennæ nigro-piceæ, corpore breviores; articuli 1^{us}. et 2^{us}. apice rufi: scutellum cultriforme: metathorax et abdominis segmentum 1^{um}. scabra, obscura, pilis albis utrinque dense hirta: abdomen nitens, læve, glabrum, thoracis longitudo: pedes rufi; coxæ omnino, meso- et metapedum femora tibiæque necnon tarsi omnes apice picea: alæ subfuscæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Fem. — Antennæ nigrae, corporis dimidio longiores; articulus 1^{us}. basi rufus; 2^{us}. et sequentes ad 6^{um}. nigro-picei: pedes picei; meso- et metatibiæ rufæ, hæ piceo terminatae, illæ cingulatae; protibiæ et tarsi omnes pallide rufa, hi apice picei. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

August and October; on grass in fields; near London.

Sp. 16. Plat. Acco. Fem. P. *Jasio similis, antennæ graciliores, alæ angustiores.*

Ater, nitens, lœvis, parce et breviter hirtus : oculi nigro-picei ; antennæ piceæ, corporis dimidio paullo longiores ; articuli 7^o. ad 10^{um}. nigri, lati : thorax ovatus ; scutellum, metathorax abdominisque segmentum 1^{um}. pilis albis densissime hirta : abdomen convexum, nitidissimum, acuminatum, thorace longius ; segmentum 2^{um}. magnum, glabrum ; sequentia brevia : pedes rufi ; coxae et femora picea, hæ basi rufa ; profemora pallidiora ; meso- et metatibiæ tarsique omnes apice fusca : alæ limpidæ ; proalæ minime fulvo tinctæ ; squamulæ piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Found in Ireland, by Mr. Haliday.

Sp. 17. Plat. Euryale. Fem. *Precedenti similis, abdomen multo brevius et obtusius.*

Ater, nitens, lœvis, parce hirtus : oculi nigro-picei : antennæ piceæ, validæ, clavatae, corporis dimidio vix longiores ; artculus 1^{us}. flavus, apice piceus ; 7^{us}. et sequentes ad 10^{um}. nigro-picei : thorax ovatus, convexus : mesothoracis parapsides scuto in unum confusæ ; scutellum breve : metathorax abdominisque segmentum 1^{um}. pilis albis dense hirta : abdomen ovatum, glabrum, thorace paullo longius et latius ; segmenta 3^o. ad 7^{um}. ejus trientem occupantia : pedes rufi ; coxae, meso- et metafemora metatibiæque picea, hæ basi pallidiores ; tarsi apice fusi : alæ albo-limpidæ ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Found once at Holywood, in Ireland, by Mr. Haliday.

Sp. 18. Plat. Halia. Mas. *Ater, antennæ pedesque picea, tarsi flavi, alis subfuscæ.*

Ater, nitens, lœvis, parce pubescens : oculi ocellique nigro-picei : antennæ piceæ, corpore paullo breviores ; artculus 1^{us}. omnino, 2^{us}. apice et subtus rufi : metathorax abdominisque segmentum 1^{um}. dense pubescentia : abdomen glabrum, latum, thorace brevius : pedes picei ; propedes flavi, coxis piceis, tibiis piceo cingulatis ; meso- et metapodium femora et tibiæ basi flava ; tarsi omnes flavi, apice picei : alæ subfuscæ ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{1}{4}$; alar. lin. $\frac{1}{2}$.)

August ; on grass in fields ; near London.

10. *Mas.* — Antennæ subfiliformes; articulus 2^{us}. ovatus, basi angustior; 3^{us}. et 5^{us}. minimi; 4^{us}. maximus, 3°. approximatus; 6^{us}. mediocris, cyathiformis; sequentes latiores, æquales; 10^{us}. acuminatus, 9°. longior: thorax ovatus: mesothoracis parapsidum suturæ bene determinatæ; scutellum abdomen attingens: metathorax abdominisque segmentum 1^{um}. brevissima: abdomen ovatum; segmentum 2^{um}. ejus dimidio longius; sequentia brevia, subæqualia.

Fem. — *Mari similis*: antennæ subclavatæ, crassiores.

Sp. 19. Plat. Abaris. *Mas et Fem. Ater, antennæ rufo-piceæ, pedes picei, protibiae tarsique rufa, alæ fuscæ.*

Mas. — *Ater*, parum nitens, subtilissime punctatus, parce pubescens: oculi ocellique nigro-picei: antennæ pallide piceæ; articuli 1^{us}. et 3^{us}. rufi; 4^{us}. 5^{us}. et 6^{us}. rufo-picei: scutellum nisi ad apicem, metathorax, abdominis segmentum 1^{um}. omnino 2^{um}. que basi pilis albis dense hirta: abdomen nitidum, læve; segmentum 2^{um}. glabrum; 3^{um}. et sequentia parce albo-hirta: pedes picei; coxæ nigrae; profemora apice, protibiæ, genua et tarsi rufa; hi apice picei: alæ fuscæ; squamulæ piceæ.

Fem. — *Antennæ nigro-piceæ*; articulus 1^{ns}. rufus; 2^{ns}. et sequentes ad 6^{um}. rufo-picei: pedes rufi; coxæ et metapedum femora tibiæque apice nigro-picea; tarsi apice picei. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{5}{4}$ —1.)

August to October; on grass beneath trees; near London.

11. *Mas.* — Antennæ filiformes; articulus 2^{us}. longi-cyathiformis; 3^{us}. 5^{us}. et 6^{us}. minutæ; 4^{us}. magnus, 3°. approximatus; 7^{us}. et sequentes lati, æquales; 10^{us}. acuminatus, 9°. longior: thorax ovatus: mesothoracis parapsidum suturæ vix conspicuæ; scutellum abdomen attingens: metathorax abdominisque segmentum 1^{um}. brevia: abdomen brevi-ovatum; segmentum 2^{um}. ejus plus dimidium occupans; sequentia brevia, subæqualia.

Fem. — *Antennæ subclavatæ*; articuli 3°. ad 6^{um}. minutæ; 3^{us}. et 4^{us}. lineares; 5^{us}. et 6^{us}. breviores, non latiores.

Sp. 20. Plat. Ozines. *Mas et Fem. Ater, antennæ pedesque rufo-picea, alæ limpidae.*

Mas. — *Ater*, nitens, lævis, parce pubescens: caput subtilissime squameum: oculi ocellique picei: antennæ rufo-piceæ, corporis

dimidio multo longiores; articulus 1^{us}. rufus, apice rufo-piceus; 7^{us}. et sequentes picei: abdomen glabrum basi cum metathorace dense albo-hirtum: pedes rufi; coxae, metafemora, metatibiæ et tarsi apice picea: alæ limpidæ; squamulæ piceæ.

Fem.—*Mari similis*: abdomen paullo longius: pedes picei; femora et tibiæ basi tarsique rufa, hi apice picei; profemora et protibiæ pallidiora. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Var. β.—*Fem.* antennæ articulis 2°. ad 6^{um}. piceis.

August; on grass in fields; near London.

Sp. 21. Plat. Trebius. Mas et Fem. *Ater, antennæ piceæ, pedes rufi, metapedes piceo cingulati, alæ fuscæ.*

Mas.—Ater, nitens, lœvis, parce pubescens: caput subtilissime squameum: oculi ocellique nigro-picei: antennæ rufo-piceæ, corporis dimidio multo longiores; articulus 1^{us}. rufus; 7^{us}. et sequentes picei: metathorax et petiolus dense albo-hirta: abdomen glabrum: pedes rufi; coxae nigro-piceæ; metapedum femora et tibiæ apice picea; tarsi pallidiores, apice rufo-picei: alæ fuscæ; squamulæ piceæ.

Fem.—*Mari similis*: antennæ et pedes pallidiora. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Found near London.

12. *Mas et Fem.*—*Mari antennæ subclavatae; articuli 7°. ad 10^{um}. lati: fem. antennæ clavatae; articuli ultimi latiores approximati: cætera ut 1°.*

Sp. 22. Plat. scutellaris. Mas et Fem. *Præcedentibus similis scutello breviore, ater, antennæ basi pedesque pallida, metafemora picea.*

Platygaster scutellaris. *Nees ab Essenbeck Hym. Ich. affin. Monogr. II. 309. 18.*

Ater, nitens, lœvis, parce pubescens: oculi nigro-picei: antennæ corporis dimidio paullo longiores; articuli 1^{us}. apice 2^{us}. que basi supra fusi; 7^{us}. et sequentes ad 10^{um}. nigro-picei: thorax ovatus: scutellum, metathorax abdominisque segmentum 1^{um}. pilis albis dense hirta: abdomen glabrum, vix petiolatum, thorace latius vix longius: pedes fulvi; coxae, meso- et metafemora

picea; metatibiae apice fuscæ; tarsi flavi apice fusti: alæ limpidæ; squamulæ piceæ. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Fem. mesofemora fulva.

Found on willows at Holywood, in Ireland, by Mr. Haliday.

††† *Scutellum brevius, vix acuminatum, abdomen non attingens.*

13. *Mas.*—Antennæ filiformes; articulus 2^{us}. cyathiformis; 3^{us}. 5^{us}. et 6^{us}. minimi; 4^{us}. magnus, 3°. approximatus; 7^{us}. et sequentes lati, fere rotundi; 10^{us}. acuminatus, 9°. longior: thorax longi-ovatus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax abdominisque segmentum 1^{um}. bene determinata: abdomen thorace longius; segmenta 3°. ad 6^{um}. brevia subæqualia.

Sp. 23. Plat. Leptines. *Mas. Ater, antennæ pedesque picea, tarsi rufi, alæ fuscæ.*

Ater, nitens, lævis, parce pubescens: oculi ocellique nigro-picei: antennæ pallide piceæ, corporis dimidi longitudine; articulus 1^{us}. basi subtusque rufus: thorax angustus; scutellum apice, metathorax et abdomen basi utrinque dense albo-pilosa: abdomen longi-ovatum, glabrum; segmentum 1^{um}. latum: pedes picei; coxae nigræ; meso- et metapedum femora et tibiæ basi rufa; profemora et protibiae rufo-picea, subtus pallidiora; tarsi pallide rufi, apice rufo-picei; unguis et pulvilli fusi: alæ fuscæ; squamulæ piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

July; on grass in fields; near London.

Sp. 24. Plat. Larides. *Mas. Præcedente crassior; alæ latores, pallidiores.*

Ater, nitens, lævis, parce pubescens: caput subtilissime punctatum: oculi ocellique nigro-picei: antennæ nigro-piceæ, corporis dimidio paullo longiores; articuli 1°. ad 6^{um}. picei, subtus rufi: abdomen longi-ovatum, glabrum; segmentum 1^{um}. et metathorax dense albo-hirta: propedes omnino rufi; meso- et metapedes picei; trochanteres femora et tibiæ basi, tarsique nisi ad apices flava: alæ sublimpidæ; squamulæ rufo-piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Var. β.—Pedes omnes picci; tarsi, tibiæ basi et propedum trochanteres flava.

July; on grass in fields; near London.

14. *Mas.*—Antennæ filiformes; articulus 2^{us.} cyathiformis; 3^{us.} parvus; 4^{us.} magnus, 3°. approximatus; 5^{us.} et 6^{us.} mediocres; 7^{us.} et sequentes paullo majores, æquales; 10^{us.} acuminatus, 9°. longior: thorax ovatus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax abdominisque segmentum 1^{um.} bene determinata: abdomen spathuliforme, thorace longius; segmentum 2^{um.} ejus plus dimidium occupans, basi utrinque impressum.

Fem.—Antennæ subclavatae; articulus 2^{us.} longi-cyathiformis; 3^{us.} et 4^{us.} mediocres, æquales; 5^{us.} et 6^{us.} paullo minores; sequentes majores; 9^{us.} et 10^{us.} approximati, hic apice rotundus.

Sp. 25. Plat. Nereus. *Mas* et *Fem.* *Ater, antennæ piceæ, abdominis margo pedesque rufi, alæ fuscæ.*

Ater, nitens, lœvis, parce pubescens: caput subtilissime squameum: oculi ocellique nigro-picei: *mari* antennæ rufo-piceæ, corporis dimidio multo longiores; articulus 1^{us.} rufus, apice piceus; 3^{us.} 4^{us.} et 5^{us.} rufi: *fem.* antennæ piceæ, breviores, crassiores, subtus pallidiores; articulus 1^{us.} omnino 2^{us.} que apice rufi: scutellum apice et subtus, metathorax abdominisque segmentum 1^{um.} utrinque albo-pilosa: abdomen lœve; acies rufa: segmentum 2^{um.} glabrum; 3^{um.} et sequentia parce albo-hirta: pedes lœte rufi; coxæ piceæ; tarsi pallide rufi; unguis fuscus: alæ obscure fuscae, latæ; squamulae rufo-piceæ. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—*Mas*, femora et tibiæ obscure rufa: antennæ articulis 4°. et 5°. rufo-piceis.

Var. γ.—*Mas*, antennæ piceæ; articulus 1^{us.} basi subtusque rufus: coxæ nigrae; femora tibiæque apice supra, tarsi apice, unguis et pulvilli picea.

July; on grass in woods; near London. September; near Linton, North Devonshire.

Sp. 26. Plat. Tritici. (Haliday, Curtis' Brit. Ent. 309.) *Mas* et *Fem.* *Præcedentis statura, alæ paullo limpidores et angustiores.*

Mas.—*Ater*, nitens, subtilissime punctatus, fere glaber: oculi ocellique nigro-picei: antennæ piceæ, corpore thoraceque paullo longiores; articuli 1^{us.} et 2^{us.} rufi: scutellum apice pubescens, nonnunquam fuscum: metathorax abdominisque segmentum 1^{um.} scabra, obscure, albo-pilosa: abdomen nitens, lœve, thorace paullo longius; segmentum 1^{um.} obsolete striatum; 2^{um.} glabrum, basi

utrinque foveolatum; 3^{um}. et sequentia albo-hirsuta: pedes rufi; coxae nigræ; tarsi pallide rufi, apice picei; unguis et pulvilli concolores: alæ fuscæ; metalæ pallidiores; squamulæ rufæ.

Fem.—Antennæ nigro-piceæ: femora picea: alæ angustiores.
(Corp. long. lin. $\frac{5}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—*Mas*, mesofemora et mesotibiæ apice picea.

Var. γ.—*Mas*, antennæ articulis 1°. ad 4^{um}. rufis.

Var. δ.—*Mas*, antennæ piceæ; articuli 1^{us}. subtus 2^{us}. que apice rufi.

Var. ε.—*Mas*, metafemora et metatibiæ apice picea.

Var. ζ.—*Mas* et *Fem.* pedes omnino rufi.

Var. η.—*Fem.* antennæ articulo 1°. rufo: femora basi rufa.

Var. θ.—*Fem.* *Var. η.* similis: pedes rufi; coxae et tarsi apice picea; metafemora apice piceo-rufa.

Var. ι.—*Fem.* antennæ articulo 1°. rufo, apice supra piceo.

Found by Mr. Haliday on *Cerealia* and willows in England and Ireland. March to May, and October; on grass; near London. June; New Forest, Hampshire. September; Cumberland; New Lanark, Scotland.

Sp. 27. Plat. Roboris. (Haliday, MSS.) *Mas* et *Fem.* *Præcedenti simillimus, at validior.*

Mas.—Ater, nitens, lævis, parce pubescens: oculi nigro-picei: antennæ piceæ, corporis dimidio multo longiores; articulus 1^{us}. læte rufus; 3^{us}. et 4^{us}. obscure rufi: scutellum pubescens: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen ovatum, thorace multo longius; segmentum 2^{um}. glabrum; sequentia brevia, subæqualia: pedes rufi; coxae nigræ; metafemora, metatibiæ et tarsi apice picea; mesotibiæ apice rufo-piceæ: alæ fuscæ; metalæ pallidiores; squamulæ rufo-piceæ.

Fem.—Antennæ piceæ; articulus 1^{us}. rufus, apice supra piceus; 7^{us}. et sequentes nigro-picei: mesotibiæ omnino rufæ. (Corp. long. lin. $\frac{4}{5}$; alar. lin. $1\frac{1}{5}$.)

Var. β.—*Mas* et *Fem.* femora et tibiæ omnino rufa.

Found in Ireland, by Mr. Haliday.

Sp. 28. Plat. Furius. *Mas* et *Fem.* *P. Tritici brevior, alæ obtusiores.*

Mas.—Ater, nitens, lævis, parce pubescens: oculi ocellique nigro-picei: antennæ rufo-piceæ, capite thoraceque multo longiores;

articuli 1^o. ad 3^{um}. rufi: scutellum pubescens, apice piceum: metathorax et abdomen basi utrinque albo-pilosa, ille scaber obscurus: abdomen ovatum; segmentum 2^{um}. glabrum; 3^{um}. et sequentia parce albo-hirta: pedes rufi; coxae piceæ; meso- et metapedum femora tibiæque apice, ungues et pulvilli picea: alæ subfuscæ; squamulæ piceæ.

Fem.—Antennæ nigræ, capite thoraceque paullo longiores; articuli 1^{us}. basi 2^{us}. que apice fusi: coxae nigræ. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. 1—1 $\frac{1}{4}$.)

Var. β.—*Mas*, antennæ articulo 1^o. rufo, apice supra piceo: femora et tibiæ omnino rufa.

Var. γ.—*Mas*, mesofemora omnino rufa.

Var. δ.—*Mas*, antennæ nigro-piceæ; articulus 1^{us}. basi rufus.

Var. ε.—*Mas*, *Var. δ* similis: antennæ articulo 1^o. subtus rufo: mesotibiæ omnino rufæ.

Var. ζ.—*Mas*, antennæ piceæ; articulus 1^{us}. rufus: mesopedes rufi; metatarsi rufo-picei.

Var. η.—*Fem.* profemora apice picea.

Var. θ.—*Fem.* meso- et metapedum femora et tibiæ apice nigro-picea.

July and August; near London. September; Isle of Wight. Penzance, Cornwall. Found in Ireland, by Mr. Haliday.

Sp. 29. *Plat. scelionoides*, Haliday, MSS. Fem. *P. Furio gracilior*, alæ angustiores.

Ater, nitens, lœvis, parce pubescens; oculi nigro-picei: antennæ piceæ, corporis dimidio paullo longiores; articulus 1^{us}. rufo-piceus; 2^{us}. apice flavus: scutellum, metathorax abdominisque segmentum 1^{um}. pubescens: abdomen longi-ovatum, thorace dimidio longius; segmentum 2^{um}. glabrum; sequentia brevia, subæqualia: oviductus flavus: pedes rufi; coxae piceæ; metafemora et tarsi apice rufo-picea: proalæ subfuscæ; metalæ fere limpidæ: squamulæ obscure rufæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Var. β.—Abdominis segmentum 1^{um}. et acies rufo-picea.

Found in Ireland, by Mr. Haliday.

Sp. 30. *Plat. Belus*. Fem. *Præcedente brevior*, antennæ nigræ.

Ater, nitens, lœvis, parce pubescens: oculi nigro-picei: antennæ nigræ, corporis dimidio paullo longiores: scutellum, metathorax

abdominisque segmentum 1^{um}. pubescentia; abdomen longiovatum; segmentum 2^{um}. glabrum; sequentia brevia: pedes picei; coxae et femora apice nigra; tibiæ basi et tarsi obscure rufa, hi apice picei: alæ fuscæ, angustæ; metalæ sublimpidæ; squamulæ nigræ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{4}{3}$.)

Var. β.—Antennæ articuli 1^{us}. basi 2^{us}. que apice picei.

Found rarely at Holywood, in Ireland, by Mr. Haliday.

Sp. 31. Plat. filicornis. (Haliday, 'Curtis' Brit. Ent. 309.)

Mas. P. Furio *similis, antennæ longiores.*

Ater, fere lœvis, parum nitens, parce hirtus: oculi nigro-picei: antennæ fuscæ, corpore paullo breviores; articulus 1^{us}. flavus; 6^{us}. et sequentes ad 10^{um}. longi, lineares: thorax ovatus; scutellum apice piceum: abdomen nitens, lœve, glabrum, thoracis longitudine; segmentum 1^{um}. scabrum, hirtum: pedes flavi; metacoxæ, meso- et metatibiæ tarsique omnes apice pallide picea: alæ sublimpidæ; squamulæ rufo-piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1 $\frac{1}{4}$.)

Found by Mr. Haliday, at Holywood, in Ireland.

Sp. 32. Plat. Crates. Mas. P. scelionoide *similis, alæ angustiores obscuriores.*

Ater, nitens, lœvis, parce pubescens: oculi ocellique nigro-picei: antennæ obscure piceæ, capite thoraceque longiores; articulus 1^{us}. basi rufus: metathorax abdominisque segmentum 1^{um}. obscura, pubescentia; segmentum 2^{um}. glabrum; 3^{um}. et sequentia parce albo-hirta: pedes obscure rufi; femora et tibiæ basi pallidiora; coxae piceæ; tarsi pallide rufi, apice obscuriores: alæ fuscæ angustæ; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

September; Isle of Wight.

Sp. 33. Plat. Otreus. Mas et Fem. *Alæ quam.* P. Furio *longiores obscuriores.*

Mas.—Ater, nitens, subtilissime punctatus, parce pubescens: oculi ocellique nigro-picei: antennæ piceæ, corpore vix breviores; articulus 1^{us}. rufus, apice piceus: scutellum apice, metathorax abdominisque segmentum 1^{um}. utrinque pilosa: segmentum 2^{um}. glabrum; 3^{um}. et sequentia parce albo-hirta: pedes rufi; coxae nigræ; metafemora et metatibiæ apice picea; tarsi pallide rufi, apice picei: alæ fuscæ; squamulæ rufo-piceæ.

- Fem.*—Antennæ breviores; articulus 1^{us}. rufo-piceus: pedes rufi.
 (Corp. long. lin. $\frac{2}{3}$ —1; alar. lin. 1—1 $\frac{1}{3}$.)
- Var. β.*—*Mas*, antennæ obscure piceæ; articulus 1^{us}. basi rufus;
 2^{us}. apice 3^{us}. que pallide fuscæ: meso- et metapedum femora et
 tibiæ picea, basi rufa.
- Var. γ.*—*Mas*, antennæ articulo 1°. piceo, basi rufo.
- Var. δ.*—*Mas*, antennæ nigro-piceæ; articulus 1^{us}. fuscus, subtus
 rufus; 2^{us}. apice rufus.
- Var. ε.*—*Mas*, *Var. γ.*, similis: metatarsi supra picei.
- Var. ζ.*—*Mas*, *Var. ε.*, similis: pro- et mesopedum femora et tibiæ
 apice picea.
- Var. η.*—*Mas*, antennæ rufo-piceæ; articulus 1^{us}. et pedes rufi.
- Var. θ.*—*Mas*, antennæ rufo-piceæ.
- Var. ι.*—*Fem.* metafemora et metatibiæ apice picea.
- Var. κ.*—*Fem.* mesofemora apice obscuriora.
- Var. λ.*—*Fem.* antennæ articulus 1^{us}. omnino 2^{us}. que apice rufi:
 pedes rufi; unguis picei: alæ basi pallidiores et fusco vittatæ.
- Var. μ.*—*Fem.* immatura? abdominis segmentum 1^{um}. piceum:
 pedes omnino læte rufi.
- Var. ν.*—*Fem.* antennæ articulo 1°. nigro-piceo, basi rufo.

August to October; on grass in fields; near London. September; Isle of Wight. New Lanark, Scotland. Found in Ireland, by Mr. Haliday.

Sp. 34. Plat. Prorsa. *Mas* et *Fem.* *Ater*, antennæ fuscæ
 aut piceæ quam P. filicorni breviores, pedes plerunque
 flavi, alæ sublimpidæ.

Ater, nitens, lævis, parce pubescens: oculi ocellique nigro-picei:
 os piceum: antennæ fuscæ; articulus 1^{us}. *fem.* 2^{us}. quoque
 flavi: scutellum apice, metathorax abdominalisque segmentum 1^{um}.
 pubescens, obscura; segmentum 2^{um}. glabrum; 3^{um}. et sequentia
 parce albo-hirta: pedes læte flavi; unguis fuscus: alæ sublim-
 pidæ; squamulæ rufæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{4}{3}$.)

Var. β.—*Mas* et *Fem.* coxae et metapedum femora tibiæque apice
 ferruginea.

Var. γ.—*Mas*, antennæ articulis 1°. et 2°. fuscis; hic apice, ille basi
 subtusque flavi.

Var. δ.—*Mas*, abdomen utrinque rufo marginatum.

Var. ε.—*Fem.* *Var. γ.*, similis: pedes ferruginei; trochanteres, genua et tarsi flava.

Var. ζ.—*Fem.* antennæ nigro-piceæ; articuli 1^{us}. et 2^{us}. pallidiores: pedes picei; trochanteres, genua et tarsi ferruginea.

May to September; on grass in woods; near London. Isle of Wight; New Forest, Hampshire. New Lanark, Scotland.

Sp. 35. Plat. Abas. Mas et Fem. *Piceus*, *præcedente gracilior*.

Piceus, angustus, nitens, lævis, parce pubescens: caput nigro-piceum: oculi ocellique nigro-picei: antennæ piceæ, corpore breviores; articuli 1^{us}. et 2^{us}. rufi, hic basi et ille apice rufo-picei: scutellum dense pilosum, apice pallidius: metathorax abdominisque segmentum 1^{um}. pubescentia, obscura: abdomen nigro-piceum; segmentum 2^{um}. glabrum: pedes rufi; unguis picei: alæ fuscæ, longæ, ciliatae; squamulæ rufæ. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—*Mas*, antennæ fulvæ; articulus 1^{us}. flavus: thorax subitus et utrinque pallidior: metathorax abdominisque segmentum 1^{um}. pallide picea.

Var. γ.—*Mas*, antennæ articulo 1°. apice supra piceo.

Var. δ.—*Mas*, alæ subfuscæ.

Var. ε.—*Mas*, antennæ articulis 1°. ad 4^{um}. rufis: metathorax abdominisque segmentum 1^{um}. rufa.

Var. γ.—*Fem.* *Var. β.*, similis: antennæ piceæ; articulus 1^{us}. basi et subtus flavus: metapedum femora et tibiæ apice picea.

Var. η.—*Fem.* antennæ articulis 1°. et 2°. flavis: pedes flavi.

Var. θ.—*Fem.* antennæ articulis 3°. ad 6^{um}. rufis.

July and August; on grass in woods; near London. New Lanark, Scotland.

15. *Mas.*—Antennæ filiformes; articulus 2^{us}. longi-cyathiformis; 3^{us}. mediocris; 4^{us}. magnus, 3°. approximatus; 5^{us}. et 6^{us}. cyathiformes, hic paullo latior; 7^{us}. et sequentes adhuc majores, æquales; 10^{us}. acuminatus, 9°. longior: thorax ovatus: mesothoracis parapsidum suturæ conspicuæ: metathorax abdominisque segmentum 1^{um}. bene determinata: abdomen spathuliforme, thorace longius; segmentum 2^{um}. ejus plus dimidium occupans, basi scite sulcatum et utrinque impressum.

Fem.—Antennæ subclavatae ; articuli 3^{us}. et 4^{us}. angusti, æquales ; 5^{us}. paullo brevior ; 6^{us}. lator ; 7^{us}. et sequentes adhuc latiores, æquales ; 10^{us}. conicus, 9^o. longior.

Sp. 36. Plat. Pisis. Mas et Fem. *Ater, antennæ piceæ aut rufæ, pedes rufi-piceo cingulati, alæ fuscæ.*

Platygaster nodicornis ? *Nees ab Essenbeck, Hym. Ich. Monogr. II. 299. 2.*

Mas.—Ater, parum nitens, subtilissime punctatus, pubescens : mandibulæ rufæ : oculi ocellique nigro-picei : antennæ piceæ, corpore breviore ; articulus 1^{us}. rufus : scutellum apice, metathorax et abdomen basi utrinque dense pilosa : abdomen nitens, læve, glabrum ; segmentum 1^{um}. sulcatum ; 3^{um}. et sequentia parce albo-hirta : pedes rufi ; coxæ et femora basi nigra ; metafemora, metatibiæ apice, tarsi apice, metatarsi basi, unguis et pulvilli picea : alæ fuscæ, basi limpidæ, mari latiores ; proalæ basi fusco vittatæ ; squamulæ rufæ.

Fem.—Mari similis : antennæ breviore : alæ angustiores. (Corp. long. lin. $\frac{3}{4}$ —1 ; alar. lin. $1\frac{1}{4}$ —1 $\frac{1}{2}$.)

Var. β.—*Mas*, antennæ articulo 2^o. apice subtusque ruso.

Var. γ.—*Mas*, antennæ omnino rufæ.

Var. δ.—*Mas*, antennæ apice nigro-piceæ.

Var. ε.—*Mas*, pedes rufi ; coxæ nigræ ; metatibiæ apice et tarsi piceo-rufa.

May and June ; on grass in woods ; near London.

Sp. 37. Plat. Remulus. Mas et Fem. *Ater, præcedente brevior, antennæ nigræ, pedes nigro-picei, alæ fuscæ.*

Mas.—Ater, nitens, fere lævis, pubescens : caput subtilissime punctatum, obscurum : oculi ocellique nigro-picei : mandibulæ rufæ : antennæ nigræ ; corpore multo breviore ; articulus 2^{us}. apice fuscus : scutellum apice dense pubescens : metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque pilosa : abdomen læve, glabrum, segmentum 3^{um}. et sequentia parce albo-hirta : pedes nigri ; protibiæ et protarsi rufa ; mesotibiæ, meso- et metatarsi picea ; metatibiæ nigro-piceæ : alæ fuscæ, basi pallidiores et fusco vittatae ; squamulæ rufo-piceæ. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. 1—1 $\frac{1}{4}$.)

Fem.—Mari similis : antennæ paullo breviore.

Var. β.—*Mas*, meso- et metatibiæ nigræ.

Var. γ.—*Mas*, propedes tibiis tarsisque piceis, genubus rufis.

Var. ♂.—*Mas.*, antennæ apice supra nigro-piceæ, subtus piceæ.

Var. ♀.—*Fem.* antennæ piceæ; articulus 1^{us}. rufus.

June; on grass in woods; near London.

Sp. 38. Plat. Didas. *Mas et Fem. Præcedenti similis sed longior, antennæ graciliores, alæ latiores et longiores.*

Mas.—Ater, nitens, fere lœvis, pubescens: caput subtilissime punctatum, obscurum: oculi ocellique nigro-picei: antennæ nigro-piceæ; corpore breviores; articulus 1^{us}. rufus: scutellum apice dense pubescens: metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque albo-pilosa: abdomen lœve, glabrum; segmentum 3^{um}. et sequentia parce albo-hirta: pedes nigro-picei; propedem genua, tibiæ tarsiique rufa: alæ fuscæ, basi pallidiores; squamulæ rufo-piceæ.

Fem.—*Mari similis*: antennæ breviores, nigræ; articulus 1^{us}. rufus.
(Corp. long. lin. 1; alar. lin. 1½.)

June; on grass in woods; near London.

††† *Scutellum obtusum, vix productum.*

16. *Mas.*—Antennæ filiformes, corporis dimidio longiores; articulus 2^{us}. cyathiformis; 3^{us}. parvus; 4^{us}. magnus, 3°. approximatus; 5^{us}. et sequentes longi, lineares, subæquales; 10^{us}. acuminatus, 9°. longior: thorax ovatus: mesothoracis parapsidum suturæ conspicuae: metathorax abdominisque segmentum 1^{um}. bene determinata: abdomen spathuliforme, thorace longius; segmentum 2^{um}. ejus plus dimidium occupans, scitissime sulcatum.

Fem.—Antennæ extrosum crassiores, breviores; articuli 3^{us}. et 4^{us}. longi-cyathiformes, æquales; 5^{us}. et sequentes quam *mari* breviores.

Sp. 39. Plat. ruficornis. *Mas et Fem. Ater, antennæ piceæ (mas) aut nigræ (fem.), pedes rufi, femora apice picea, alæ subfuscæ.*

Scelio ruficornis . . Latreille Hist. Nat. des Crust. et des Ins. XIII. 227.

Platygaster ruficornis. Latr. Gen. Crust. et Ins. IV. 32.

Platygaster grandis . Nees ab Essenbeck, Hym. Ich. affin. Monogr. II. 300. 4.

Mas.—Ater, obscurus, subtilissime punctatus, pubescens: oculi ocellique nigro-picei: mandibulæ maxillæ et labium nigra: palpi,

ligula et maxillarum lobi rufa: antennæ piceæ; articulus 1^{us}. rufus: mesothoracis scutum postice et scutellum pilosa: abdomen basi utrinque et subtus pilosum; segmentum 2^{um}. scite sulcatum et apice punctatum, vitta media lævis nitens; 3^{um}. et sequentia albo-hirta, basi lævia nitida: pedes rufi; coxæ nigrae; meso- et metafemora apice basique nigra; tarsi apice, ungues et pulvilli fusi: alæ subfuscæ, basi limpidæ; proalæ basi fusco vittatæ; squamulæ nigrae.

Fem.—Paullo longior: antennæ nigrae; articuli 1^{us}. 3^{us}. et 4^{us}. rufi: abdominis segmentum 2^{um}. nitens, læve, antice scite sulcatum: trochanteres et mesofemora nigra: metafemora nigro-picea, nitida, basi rufa: alæ fere lucidæ; in proalæ cujusque disco vitta angusta limpida. (Corp. long. lin. 1½—1¾; alar. lin. 1½—1¾.)

Var. β.—*Mas*, antennæ nigro-piceæ; articulus 1^{us}. rufus.

Var. γ.—*Mas*, antennæ et pedes omnino picea; propedes obscuriores: alæ obscuræ.

Var. δ.—*Fem.* antennæ nigro-piceæ; articuli 1°. ad 4^{um}. rufi: pedes rufi.

Var. ε.—*Fem.* antennæ articulis 1°. ad 4^{um}. obscure rufis: abdominis segmentum 2^{um}. sulcis fere ad medium productis: genua, mesotibiæ et metatarsi nigro-picea.

July; on grass beneath trees; near London. England, Ireland, and Scotland, in marshes, Mr. Haliday.

Sp. 40. Plat. Erato. *Mas*. *Præcedente brevior et crassior, alæ obscuriores latiores.*

Ater, obscurus, subtilissime punctatus pubescens: oculi ocellique nigro-picei: antennæ rufæ; articulus 2^{us}. fuscus: mesothoracis scutum postice et scutellum pilosa: abdomen basi utrinque et subtus pilosum; segmentum 2^{um}. scite sulcatum et apice punctatum, vitta media nitida lævis; 3^{um}. et sequentia albo-hirta, basi lævia nitida: pedes nigri; propedes, meso- et metatibiæ basi mesotarsique rufa; metatarsi picei: alæ obscure fuscæ, basi limpidæ; proalæ basi fusco vittatæ; squamulæ nigrae. (Corp. long. lin. 1½: alar. lin. 1¾.)

September; near Keswick, in Cumberland.

Sp. 41. Plat. Matuta. *Mas et Fem.* *Præcedentibus lævior, nitentior, gracilior, alæ obscure fuscæ angustiores.*

Ater, subnitens, subtilissime punctatus, pubescens: oculi ocellique nigro-picei: antennæ piceæ; articulus 1^{us}. rufus; 3^{us}. et 4^{us}.

rufo-picei : mesothoracis scutum postice, scutellum, metathorax et abdomen basi utrinque pilosa : abdomen nitidum, læve ; segmentum 1^{um}. obscurum, sulcatum ; 2^{um}. scite sulcatum, apex et vitta dorsalis nitida lævia ; 3^{um}. et sequentia albo-hirta : pedes rufi ; coxae nigrae ; trochanteres, tarsi apice, ungues et pulvilli picei : alæ obscure fuscæ, angustæ, basi sublimpidæ ; squamulæ nigrae. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{2}$.)

September ; near Keswick, Cumberland.

Sp. 42. Plat. Cotta. Fem. *Præcedentis statura, alæ subfuscæ.*

Ater, obscurus, subtilissime punctatus, pubescens : oculi ocellique nigro-picei : antennæ nigrae ; articuli 1°. ad 4^{um}. rufo-picei : mesothoracis scutum postice, scutellum, metathorax et abdomen basi utrinque pilosa : abdomen læve, nitidum ; segmentum 1^{um}. omnino 2^{um}. que basi subtilissime striata ; 3^{um}. et sequentia albo-hirta, apice punctata : pedes nigri ; propedum femora apice, tibiae et tarsi rufa ; trochanteres, mesotibiae, meso- et metatarsi nigropicea ; unguis et pulvilli fusci : alæ subfuscæ, angustæ ; proalæ basi lucidiores et fusco vittatæ ; squamulæ nigrae. (Corp. long. lin. 1 $\frac{1}{2}$; alar. lin. 1 $\frac{5}{4}$.)

Var. β.—Antennæ articulis 1°. ad 4^{um}. rufis.

June ; New Forest, Hampshire.

17. *Mas.* — *Præcedenti similis* : mesothoracis parapsidum suturæ vix conspicuae : abdominis segmentum 2^{um}. læve.

Sp. 43. Plat. Rutubus. *Mas. Ater, antennæ piceæ, pedes rufi, alæ fuscae perangustæ.*

Ater, nitens, lævis, longus, angustus, parce et breviter pubescens, fere cylindricus : oculi ocellique nigro-picei : antennæ piceæ, capite thoraceque longiores ; articuli 1^{us}. omnino, 2^{us}. 3^{us}. que subtus rufi ; 4^{us}. minime dilatatus, 5ⁱ. magnitudine : thorax longi-ovatus : metathorax abdominisque segmentum 1^{um}. scabra, obscura, ille utrinque productus acutus : abdomen fusiforme, thorace multo longius ; segmentum 2^{um}. glabrum, thoracis longitudine, basi scite sulcatum, utrinque rufo marginatum ; sequentia brevia, subæqualia : pedes rufi ; tarsi pallidiores ; unguis et pulvilli basi fusci : alæ obscure fuscæ, perangustæ ; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

June ; Windsor Forest.

** *Scutellum tuberculo simile, non productum.*

† *Fem. abdominis segmenta postica attenuata.*

18. *Fem.*—Antennæ extrorsum crassiores, corporis dimidio breviores; articulus 2^{us}. cyathiformis; 3^{us}. minimus; 4^{us}. et sequentes mediocres, breves, æquales; 10^{us}. paullo longior, conoides, 9°. approximatus: thorax ovatus: mesothoracis parapsidum suturæ conspicuæ; scutellum minime convexum: metathorax brevissimus: abdomen teliforme, thorace duplicato multo longius; segmenta 1°. ad 3^{um}. sequentibus paullo breviora; 1^{um}. bene determinatum; 2^{um}. et 3^{um}. ovatum fингentia, hoc 1ⁱ. longitudine, illum thorace paullo brevius; 4^{um}. basi paullo latius, 3°. fere duplo longius; 5^{um}. lineare, 4°. multo longius; 6^{um}. acuminatum, 4ⁱ. longitudine.

Sp. 44. *Plat. ensifer.* Fem. *Ater, pedes rufo-fusci, alæ albæ.*
Epimeces ensifer . . Westwood, Loudon's Mag. Nat. Hist.
VI. 421. fig. g.^a

Ater, nitens, lœvis, fere glaber: caput subtilissime punctatum: oculi ocellique nigro-picei: antennæ nigræ; articuli 1^{us}. basi 2^{us}. que apice fusci: abdomen scitissime sulcatum; segmentum 1^{um}. scabrum, obscurum: pedes obscure picei; coxae nigræ; trochanteres rufo-picei; tibiae piceæ, apice basique rufæ; protibiae rufæ, piceo cingulatæ; tarsi rufi, apice picei: alæ albolimpidæ; squamulae obscure piceæ. (Corp. long. lin. 1½—1½; alar. lin. 1—1¼.)

Var. β.—Femora basi rufo-picea; protibiae piceæ, basi apice et subtus rufæ.

July; on grass in fields; near London. Found in Ireland, by Mr. Haliday.

19. *Fem.*—Antennæ subclavatae, capit is thoracisque longitudine; articulus 2^{us}. cyathiformis; 3^{us}. minimus; 4^{us}. 3°. approximatus; sequentes 5°. ad 9^{um}. gradatim latescentes; 10^{us}. brevi-ovatus, 9°. paullo longior et latior: thorax brevi-ovatus: mesothoracis parapsidum suturæ conspicuæ; scutellum maxime convexum: metathorax brevissimus: abdomen teliforme, thorace triplo longius; segmenta 1°. ad 3^{um}. sequentibus paullo longiora; 1^{um}. brevissimum; 2^{um}. fusiforme, thorace paullo longius; 3^{um}. 2ⁱ. dimidio

^a Many natural genera are probably comprised in *Platygaster*, but the genus *Epimeces*, referred to above, is founded on error; sexual characters are there regarded as sectional, and vice versa. The observation on *Plat. ruficornis* is also erroneous.

brevius; 4^{um}. 3°. longius; 5^{um}. adhuc longius, lineare; 6^{um}. acuminatum, 3ⁱ. longitudine.

Sp. 45. Plat. Acrisius. Fem. *Ater, præcedente brevior, abdomen basi angustius apice latius, tarsi picei, alæ albæ.*

Ater, obscurus, subtilissime punctatus, fere glaber: caput scite undatim sulcatum: oculi ocellique nigro-picei: antennæ nigræ: abdomen scitissime sulcatum, pilis albis breviter et parce hirtum; segmentum 1^{um}. scabrum; 2^{um}. læve, glabrum, nitens, basi sulcatum; 3^{um}. et sequentia basi et apice nitida, glabra: pedes nigri; profemora apice, tibiæ basi et apice tarsique picea: alæ albo-limpidæ; squamulæ obscure piceæ. (Corp. long. lin. 1 $\frac{1}{2}$; alar. lin. 1 $\frac{1}{8}$.)

Found near London.

20. Fem.—Antennæ clavatae, corporis dimidio breviores; articulus 2^{us}. cyathiformis; 3^{us}. minimus; 4^{us}. et sequentes ad 9^{um}. latitudine crescentes; 10^{us}. brevi-conoides, 9°. vix longior: thorax brevi-ovatus: mesothoracis parapsidum suturæ conspicuæ: scutellum minime convexum: metathorax brevissimus: abdomen teliforme, thorace plus duplo longius; segmentum 1^{um}. bene determinatum; 2^{um}. et 3^{um}. ovatum fingentia thoracis longitudine, hoc 1°. brevius; 4^{um}. 3°. duplo longius; 5^{um}. lineare, 4°. longius; 6^{um}. acuminatum, 1ⁱ. longitudine.

Sp. 46. Plat. elongatus. (Haliday, Curtis' Brit. Ent. 309.)

Fem. *Ater, antennæ basi pedesque rufa, alæ fuscæ.*

Ater, nitidissimus, lævis, glaber, caput postice e. scutellum subtilissime punctata: oculi ocellique nigro-picei: mandibulæ rufæ: antennæ nigro-piceæ, crassæ; articuli 1°. ad 3^{um}. rufi: abdominis acies rufus; segmentum 1^{um}. et metathorax scabra, obscure, utrinque pilosa; 2^{um}. basi scite sulcatum; 3^{um}. et sequentia scitissime sulcata basi et apice lævia: pedes omnino rufi; unguis picei: alæ fuscæ; squamulæ rufæ. (Corp. long. lin. 1; alar. lin. 1.)

Var. β.—Antennæ articulis 1°. et 2°. supra pallide piceis.

Var. γ.—Antennæ omnino piceæ: meso- et metafemora piceo-rufa.

June and July; on grass in fields; near London.

21. Mas.—Antennæ filiformes, crassæ, capite thoraceque paullo longiores; articulus 2^{us}. cyathiformis; 3^{us}. minimus; 4^{us}. magnus, 3°. approximatus; 5^{us}. et sequentes mediocres, breves, æquales; 10^{us}. conoides, acuminatus, 9°. longior: thorax brevi-ovatus:

mesothoracis parapsidum suturæ conspicuæ ; scutellum convexum : metathorax brevissimus : abdomen ovatum, thorace longius et angustius ; segmentum 1^{um}. bene determinatum ; 2^{um}. thorace paullo brevius ; sequentia brevia, subæqualia.

Fem. — Antennæ graciles, extrorsum crassiores, capite thoraceque longiores ; articulus 3^{us}. minutus ; 4^{us}. mediocris ; 5^{us}. et 6^{us}. paullo latiores ; 7^{us}. et sequentes adhuc latiores, æquales ; 10^{us}. ovatus, 9°. multo longior : abdomen teliforme, thorace triplo longius ; segmentum 2^{um}. longi-ovatum, thorace paullo brevius ; 3^{um}. 2ⁱ. dimidiati longitudine ; sequentia angusta, plana, subincurva ; 4^{um}. 3°. multo longius ; 5^{um}. adhuc longius ; 6^{um}. brevius, acuminatum.

Sp. 47. *Plat. attenuatus*. (Haliday, Curtis' Brit. Ent. 309.)

Mas et Fem. *Ater*, fem. *abdomen thorace triplo longius, genua et tarsi picea, alæ subfuscæ*.

Mas. — Ater, subtilissime punctatus, parum nitens, parce et breviter pubescens : oculi ocellique nigro-picei : antennæ nigræ ; articulus 2^{us}. apice fuscus : thorax convexus : metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque densius hirta : abdomen lœve, nitens ; segmentum 2^{um}. glabrum, basi scite sulcatum : oviductus pallide fuscus : pedes nigri ; genua et tarsi picea ; pro- et mesogenua rufo-picea ; protibiae apice subtus rufæ : proalæ fuscæ, angustæ ; metalæ limpidæ ; squamulæ nigro-piceæ.

Fem. — Abdominis segmenta 3°. ad 6^{um}. scitissime sulcata, basi et apice lœvia : genua et tarsi nigro-picea, propedibus pallidiora : proalæ subfuscæ. (Corp. long. lin. mari $\frac{1}{2}$ — $\frac{2}{3}$, fem. 1—1 $\frac{1}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β. Mas, propedes rufo-picei ; coxae tarsique obscuriora.

April and May ; on grass in fields ; near London.

22. *Fem.* — Antennæ extrorsum crassiores, capite thoraceque longiores ; articulus 2^{us}. longi-cyathiformis ; 3^{us}. minimus ; 4^{us}. 3°. approximatus ; 5^{us}. et 6^{us}. æquales, mediocres ; 7^{us}. et sequentes latiores et longiores ; 10^{us}. conoides, 9°. longior : thorax ovatus : mesothoracis parapsidum suturæ optime determinatae ; scutellum convexum : metathorax abdominisque segmentum 1^{um}. brevia : abdomen teliforme, thorace plus duplo longius ; segmenta 2^{um}. et 3^{um}. ovatum, fingentia thorace paullo longius, hoc illius trientis longitudine ; sequentia plana ; 4^{um}. 3°. duplo longius ; 5^{um}. adhuc longius ; 6^{um}. acuminatum, 4°. brevius.

Sp. 48. Plat. Gyge. Fem. *Ater, pedes rufi, femora picea, alæ subfuscæ.*

Ater, parum nitens, subtilissime squameus, fere glaber : caput supra profundius excavatum : oculi ocellique nigro-picei : antennæ nigræ, graciles ; articuli 1^{us}. basi et apice 2^{us}. que apice flavi : mesothoracis scutum antice utrinque leviter sulcatum ; scutellum semicirculum fingens : metathorax abdominisque segmentum 1^{um}. scabra, obscura : abdomen nitidum, læve, glabrum ; segmentum 2^{um}. basi scite sulcatum ; sequentia teretia, quasi telum fingentia : pedes rufi ; coxae nigræ ; trochanteres et femora picea ; profemora et metatibiæ piceo-rufa ; tarsi apice picei : proalæ subfuscæ ; metalæ sublimpidæ ; squamulae piceæ. (Corp. long. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$; alar. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$.)

Var. β.—Profemora rufa ; metatarsi picei.

April ; on grass beneath trees ; near London. Found in Ireland, by Mr. Haliday.

23. Fem.—Antennæ subclavatae, capite thoraceque paullo longiores ; articulus 2^{us}. longi-cyathiformis ; 3^{us}. minutus ; 4^{us}. mediocris, 3°. approximatus ; 5^{us}. et 6^{us}. æquales ; 7^{us}. et sequentes majores ; 10^{us}. conoides, 9°. longior : thorax ovatus : metathorax brevis : abdomen teliforme ; segmentum 1^{um}. sat bene determinatum ; 2^{um}. ovatum, convexum, thorace paullo brevius ; sequentia teretia, plana ; 4^{um}. 3°. fere duplo longius ; 5^{um}. 4ⁱ. longitudine ; 6^{um}. brevius, acuminatum.

§ *Mesothoracis parapsidum suturæ conspicuae ; scutellum convexum : abdomen thorace plus duplo longius.*

Sp. 49. Plat. Munitus. Fem. *Ater, abdomen thorace duplicato longius, tarsi nigro-picei, alæ subfuscæ.*

Ater, parum nitens, subtilissime punctatus, parce et breviter pubescens : caput posticum transverse sulcatum : oculi ocellique nigro-picei : antennæ nigræ, latæ : thoracis latera læviora, nitidiora : metathorax abdominisque segmentum 1^{um}. scabra : abdomen læve, nitens, glabrum ; segmentum 2^{um}. basi scite sulcatum ; oviductus rufus : pedes nigri ; femora et tibiæ lata ; genua et tarsi nigro-picea ; propedum genua et tarsi picea, tibiæ apice subtus rufæ : alæ subfuscæ, sat latæ ; metalæ sublimpidæ ; squamulae nigro-piceæ. (Corp. long. lin. $\frac{3}{4}$ —1 ; alar. lin. 1—1 $\frac{1}{2}$.)

Var. β.—Genua et tarsi picea ; progenua et protarsi rufa, hi apice picei.

Found near London.

Sp. 50. Plat. Tisias. Fem. P. Munito *multo gracilior, alæ angustiores.*

Ater, subtilissime punctatus, fere lævis, parum nitens, pilis nonnullis brevissimis vix conspicuis hirtus: oculi ocellique nigro-picei: antennæ nigræ, graciles; articulus 2^{us}. apice fuscus: metathorax abdominisque segmentum 1^{um}. scabra; abdomen nitidum, læve, fere glabrum; segmentum 2^{um}. basi scite sulcatum; pedes nigri; genua et tarsi picea; propedium genua, tibiæ apice subtus et tarsi rufo-picea, hi apice obscuriores: alæ subfuscæ, angustæ; metalæ sublimpidæ; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. $\frac{1}{2}$ — $\frac{5}{4}$.)

Var. β.—Genua et tarsi rufo-picea; protibiæ et protarsi rufa, hi apice et illæ supra picea.

May; on grass in fields; near London.

§§ *Mesothoracis parapsidum suturæ optime determinatæ; scutellum globosum: abdomen thorace vix duplo longius.*

Sp. 51. Plat. Cyrsilus. Fem. *Ater, tarsi rufo-picei, alæ sublimpidæ.*

Ater, nitens, lævis, parce et breviter pilosus: oculi ocellique nigro-picei: antennæ nigræ, graciles, capite thoraceque longiores; articulus 2^{us}. apice fuscus: metathorax abdominisque segmentum 1^{um}. scabra: abdomen glabrum; segmentum 2^{um}. basi scite sulcatum: pedes nigri; genua et tarsi picea; propedium genua, tibiæ apice subtus et tarsi rufo-picea, hi apice obscuriores: alæ sublimpidæ; proalæ latæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{3}{4}$.)

May; on grass in fields; near London. Found in Ireland, by Mr. Haliday.

24. *Fem.*—Antennæ extrorsum crassiores, capite thoraceque multo longiores; articulus 2^{us}. longi-cyathiformis; 3^{us}. minutus; 4^{us}. paullo major; 5^{us}. et 6^{us}. mediocres; 7^{us}. et sequentes longiovati, latiores; 10^{us}. acuminatus, 9^o. longior: thorax ovatus: mesothoracis parapsidum suturæ vix conspicuæ; scutellum globosum: metathorax abdominisque segmentum 1^{um}. brevia: abdomen thorace vix duplo longius, apicem versus sub-incurvum; segmentum 2^{um}. ejus dimidii longitudine, ovatum; 3^{um}. breve; 4^{um}. longius; 5^{um}. adhuc longius; 6^{um}. acuminatum, 4ⁱ. longitudinaline.

Sp. 52. Plat. Pelias. Fem. P. Cyrsilo *similis*, antennæ graciliores, abdomen brevius.

Ater, parum nitens, subtilissime squameus, pubescens; oculi ocellique nigro-picei: antennæ nigræ, graciles; articulus 2^{us}. apice fuscus: metathorax abdominisque segmentum 1^{um}. scabra: abdomen nitens, lœve, glabrum; basi scite sulcatum; pedes nigri; trochanteres, genua et tarsi nigro-picea; propedum genua, tibiæ apice et tarsi rufo-picea, subtus pallidiora: alæ sublimpidæ; squamulæ piceæ. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{2}{3}$ — $\frac{3}{4}$.)

Found near London. August; on willows, in Ireland; Mr. Haliday.

25. Fem.—Antennæ subclavatæ, capite thoraceque paullo longiores; articulus 2^{us}. longi-cyathiformis; 3^{us}. et 4^{us}. mediocres, approximati; 5^{us}. et sequentes ad 9^{um}. subrotundi, gradatim latescentes; 10^{us}. ovatus, 9°. longior et latior: thorax ovatus: mesothoracis parapsidum suturæ conspicua; scutellum convexum: metathorax brevis: abdomen fusiforme, convexum, thorace plus duplo longius; segmentum 2^{um}. ejus dimidium occupans; 3^{um}. et 4^{um}. brevia, subæqualia; 5^{um}. et 6^{um}. longiora, plana, quasi trullam fingentia, hoc acuminatum.

Sp. 53. Plat. Vænia. Fem. Ater, nitens, tarsi rufi, alæ sublimpidæ.

Ater, nitidissimus, lœvis, glaber: oculi ocellique nigro-picei: antennæ nigræ; articulus 2^{us}. apice fuscus: metathorax scaber, utrinque pilis albis hirtus: abdominis segmentum 1^{um}. sulcatum, sat bene determinatum; 2^{um}. longi-ovatum, apice latius: oviductus rufus: pedes nigri; trochanteres picei; tibiæ nigro-piceæ, basi rufæ; tarsi rufi, supra picei, apice obscuriores: alæ sublimpidæ; metalæ limpidæ; squamulæ nigro-piceæ. (Corp. long. lin. 1; alar. lin. 1 $\frac{1}{4}$.)

May; on grass in fields; near London.

26. Fem.—Antennæ extrorsum crassiores, capitis thoracisque vix longitudine; articulus 2^{us}. cyathiformis; sequentes breves, approximati; 3^{us}. et 4^{us}. vix disjuncti; 5^{us}. et 6^{us}. mediocres; 7^{us}. et sequentes paullo latiores, æquales; 10^{us}. ovatus, 9°. longior: thorax ovatus: mesothoracis parapsidum suturæ conspicua; scutellum parum convexum: metathorax abdominisque segmentum 1^{um}. brevia: abdomen teliforme, thorace duplo longius;

segmentum 3^{um}. 2^o. trientis longitudine; 4^{um}. 3^o. multo longius; 5^{um}. et 6^{um}. 4ⁱ. longitudine, hoc acuminatum.

Sp. 54. Plat. Cœbalus. Fem. *Ater, obscurus, protarsi picei, alæ albo-limpidae.*

Ater, obscurus, subtilissime punctatus, parce et breviter pubescens: oculi ocellique nigro-picei: antennæ nigræ, validæ, capitis thoracisque vix longitudine: metathorax abdominisque segmentum 1^{um}. scabra: abdomen nitens, læve, glabrum; segmentum 2^{um}. longi-ovatum, basi scite sulcatum: oviductus flavus, apice fuscus: pedes nigri, validi; tarsi lati; propedum genua, tibiæ apice subtus et tarsi picea: alæ albo-limpidae; squamulae nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{3}{4}$.)

Found near London.

27. *Mas*.—Antennæ filiformes, corpore breviores; articulus 2^{us}. cyathiformis; 3^{us}. minutus; 4^{us}. maximus, 3^o. approximatus; 5^{us}. et sequentes ovati, æquales; 10^{us}. acuminatus, 9^o. longior: thorax ovatus, altus: mesothoracis parapsidum suturæ vix conspicuæ; scutellum globosum: metathorax brevis: abdomen ovatum, thorace vix longius; segmentum 2^{um}. ejus fere totum occupans; 1^{um}. bene determinatum; 3^{um}. et sequentia brevissima.

Fem.—Antennæ extrorsum crassiores, capite thoraceque paullo longiores; articulus 2^{us}. longi-cyathiformis; sequentes ovati; 3^{us}. minutus; 4^{us}. mediocris, 3^o. approximatus; 5^{us}. et 6^{us}. breves; 7^{us}. et sequentes paullo latiores; 10^{us}. ovatus, 9^o. longior: abdomen thorace dimidio longius; segmentum 2^{um}. ejus dimidium vix occupans; 3^{um}. breve; sequentia paullo longiora, 6^{um}. acuminatum.

§ *Mesothoracis parapsidum suturæ conspicuæ.*

Sp. 55. Plat. Demades. Mas et Fem. *Ater, tarsi picei, alæ fuscæ.*

Ater, parum nitens, subtilissime punctatus, breviter pubescens: caput posticum transverse sulcatum: oculi ocellique nigro picei: antennæ nigræ; articulus 2^{us}. apice fuscus: metathorax scaber: abdomen nitidum, læve, glabrum; segmentum 1^{um}. sulcatum; 2^{um}. longi-ovatum, basi scite sulcatum: oviductus fuscus: pedes nigri; genua et tarsi picea; propedum genua, tibiæ apice subtus et tarsi piceo-rufa: hi apice obscuriores: proalæ fuscæ; metalæ

sublimpidæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{4}{5}$ — $\frac{2}{3}$; alar. lin. $\frac{2}{3}$ — $\frac{3}{4}$.)

Var. β.—*Mas*, genua et tarsi pallidiora.

Var. γ.—*Fem.* genua et tarsi rufo-picea; progenua et protarsi rufa, hi apice picei.

Var. δ.—*Fem.* genua et tarsi nigro-picea, propedibus pallidiora.

Found near London.

Sp. 56. Plat. Orcus. Fem. *Præcedenti similis, alæ latiores.*

Ater, parum nitens, subtilissime punctatus, dense et breviter pubescens: caput posticum transverse sulcatum: oculi ocellique nigro-picei: antennæ nigræ: metathorax scaber: abdomen nitens, læve, glabrum; segmentum 1^{um}. profunde sulcatum; 2^{um}. longiovatum, apice latius, basi ad medium scite sulcatum: pedes nigri, validi; genua et tarsi nigro-picea; propedium genua, tibiæ apice subtus et tarsi pallidiora: alæ obscure fuscæ, apice latæ obtusæ; metalæ subfuscæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{5}{4}$.)

Found near London.

Sp. 57. Plat. Chrysippus. Fem. *Abdomen quam præcedentibus longius.*

Ater, obscurus, subtilissime punctatus, breviter pubescens: oculi ocellique nigro-picei: antennæ nigræ, capite thoraceque paullo longiores; articulus 2^{us}. apice fuscus: mesothoracis parapsidum suturæ optime determinatæ: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen nitidum, læve, glabrum, convexum thorace duplicato brevius, apicem versus minime incurvum; segmentum 2^{um}. ejus dimidio paullo brevius, basi scite sulcatum, apice latius; 4^{um}. et sequentia quasi telum fingentia; 6^{um}. 5°. brevius: oviductus pallide flavus, abdominis dimidio longius: pedes nigri; trochanteres et genua picea; protibiæ apice et tarsi rufo-picea, subtus pallidiora: alæ obscure fuscæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{4}{5}$; alar. lin. 1 $\frac{1}{8}$.)

May; on grass in fields; near London.

Sp. 58. Plat. Gorge. *Mas et Fem. Ater, pedes rufo-picei, alæ albo-limpidæ.*

Mas.—Ater, parum nitens, subtilissime squameus, breviter pubescens: caput posticum sulcis transversis scite undatum: oculi

ocellique nigro-picei: antennæ nigræ, breves, crassæ, capitis thoracisque longitudine; articuli 1^{us}. basi 2^{us}. que apice fusi: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen longi-ovatum, nitidum, lœve, glabrum, thorace paullo longius et angustius, apice rotundum non acuminatum; segmentum 2^{um}. ejus dimidio multo longius, basi scite sulcatum; 3^{um}. et sequentia brevissima: pedes nigri; trochanteres, genua et tarsi nigro-picea; propedes pallidiores, tibiæ apice subtus et tarsi rufa, hi apice fusi: alæ albo-limpidae, breves; squamulæ piceæ.

Fem.—*Mari similis*: abdomen thorace dimidio longius, postice attenuatum et acuminatum; segmentum 2^{um}. ejus dimidio paullo brevius, apice latius; 3^{um}. 2ⁱ. quintæ partis longitudine; 4^{um}. 3ⁱ. longius; 5^{um}. 4ⁱ. multo longius; 6^{um}. 4ⁱ. longitudine, acuminatum: pedes nigro-picei; trochanteres, genua et tibiæ apice rufo-picea; tarsi rufi, apice picei. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{2}{3}$.)

Found near London.

§§ *Mesothoracis parapsidum suturæ vix conspicuæ.*

Sp. 59. Plat. Iolas. Fem. *Ater, tarsi nigro-picei, alæ limpidae.*

Ater, parum nitens, fere lœvis, breviter pubescens: oculi ocellique picei: antennæ nigræ, graciles, capite thoraceque multo longiores; articulus 2^{us}. apice fuscus: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen nitidum, lœve, glabrum, thorace multo longius: segmentum 2^{um}. ovatum, abdominis fere dimidium occupans, basi scite sulcatum; 3^{um}. 2ⁱ. quintæ partis longitudine; 4^{um}. paullo longius; 5^{um}. adhuc longius; 6^{um}. 5ⁱ. longitudine, acuminatum: pedes nigri; genua et tarsi nigro-picea: alæ limpidae; squamulæ piceæ. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{2}{3}$.)

Found near London.

Sp. 60. Plat. Galenus. Fem. *Præcedente minor, abdomen plus attenuatum.*

Ater, nitens, lœvis, glaber, minimus: oculi nigro-picei: antennæ nigræ, subclavatae, corporis dimidio multo longiores: thorax brevi-ovatus; segmenta vix conspicua: mesothoracis parapsides scuto in unum confusa: pro- et metathorax brevissima: abdomen longi-ovatum, subarcuatum, postice attenuatum acuminatum, thorace dimidio longius; segmentum 1^{um}. brevissimum; 2^{um}.

maximum; 3^{um}. et sequentia brevia, subæqualia: pedes nigri; gena et tarsi obscure picea: alæ limpidæ, parvæ; squamulæ piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{1}{2}$.)

Found in Ireland, by Mr. Haliday.

† *Mari et Fem. abdomen ovatum aut longi-ovatum, non attenuatum.*

28. *Mas.*—Antennæ moniliformes, nodosæ, corpore paullo breviores; articulus 2^{us}. brevi-cyathiformis; 3^{us}. minimus; 4^{us}. maximus, dilatatus, 3°. approximatus; 5^{us}. et sequentes ad 9^{um}. æquales, sub-cyathiformes; 10^{us}. angusti-ovatus, acuminatus, 9°. longior: thorax ovatus, convexus: mesothoracis parapsidum suturæ conspicuae; scutellum globosum, extans: metathorax brevis, utrinque apice dentatus: abdomen spathuliforme, thorace paullo longius; segmentum 1^{um}. bene determinatum; 2^{um}. maximum; sequentia brevia.

Fem.—Antennæ moniliformes, extrorsum crassiores, corpore multo breviores; articulus 2^{us}. cyathiformis; 3^{us}. parvus; 4^{us}. mediocris, cyathiformis, 3°. approximatus; 5^{us}. et sequentes subæquales; 10^{us}. ovatus, 9°. paullo longior et angustior: abdomen longi-ovatum, thorace longius et paullo latius.

§ Thorax punctatus.

‡ *Mesothoracis parapsidum suturæ conspicuae.*

Sp. 61. Plat. Otanes. *Mas et Fem. Ater, propedes rufi, alæ albo-limpidæ.*

Mas.—Ater, obscurus, subtilissime punctatus, pilis nonnullis albis hirtus, subtus lævior et nitidior: caput postice nitens, fere læve: oculi ocellique nigro-picei: os piceum: antennæ nigræ; articulus 1^{us}. basi et apice, 2^{us}. apice 3^{us}. que basi fusci: metathorax abdominisque segmentum 1^{um}. scabra, utrinque pilis albis vestita: abdomen nitens, læve, 2^{um}. basi ultra medium scite sulcatum: pedes nigri; tibiæ basi et trochanteres picea; spinæ tibiales et propedes rufa, horum coxae nigrae, femora et tibiæ supra piceo vittata, tarsi obscure rufi apice picei: alæ albo-limpidæ; squamulæ nigro-piceæ.

Fem.—Abdomen latius: antennæ graciliores: meso- et metapedes omnino nigri: alarum margines obscuriores. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{3}$ — $1\frac{1}{2}$.)

Var. β.—*Mas*, tibiæ basi apiceque rufo-piceæ; propedum femora et tibiæ omnino rufa.

Var. γ.—*Mas*, tibiæ basi rufæ; tarsi picei.

Found near London.

Sp. 62. Plat. Pleuron. Mas et Fem. *Præcedente minor brevior crassior, antennæ quoque breviores crassiores.*

Mas.—Ater, obscurus, subtilissime punctatus, pilis nonnullis albis hirtus, subtus lævior et nitidior: oculi ocellique nigro-picei: os piceum: antennæ nigræ; articuli 1^{us}. et 3^{us}. basi 2^{us}. que apice fusi: metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque pilis albis vestita: abdomen nitens, læve; segmentum 2^{um}. basi ultra medium scite sulcatum: pedes nigri; tibiæ basi rufo-piceæ; tarsi nigro-picei; propedes picei, coxis nigris, femoribus tibiisque subtus rufis: alæ albo-limpidæ; squamulæ piceæ.

Fem.—*Mari similis*: antennæ nigræ, graciliores; articulus 2^{us}. apice pallidus: oviductus fuscus: protibiæ omnino rufæ. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ — $1\frac{1}{4}$.)

Var. β.—*Mas*, sulci abdominales segmenti 2ⁱ. medium non attingentes.

Var. γ.—*Mas*, propedum tibiæ tarsique rufa; illæ supra medio piceæ.

April to June; on grass in fields; near London.

Sp. 63. Plat. Sonchis. Mas et Fem. *Præcedenti similimus, lævior nitidior, alæ subfuscæ.*

Mas.—Ater, parum nitens, fere glaber: caput punctatum, obscurum: oculi ocellique nigro-picei: antennæ nigræ, crassæ: thorax subtilissime punctatus, subtus et utrinque lævis, nitidus: metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque pilis albis vestita: abdomen nitens, læve; segmentum 2^{um}. basi fere ad medium scite sulcatum: pedes nigri; genera et tarsi nigro-picea; propedes picei coxis nigris, femoribus apice tibiisque subtus rufis: alæ subfuscæ; squamulae nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. $\frac{4}{5}$ —1.)

Fem.—*Mari similis*: antennæ graciliores et paullo breviores.

Var. β.—*Mas et Fem.* genua et tarsi rufo-picea, propedibus rufa.

April to July; on grass in fields; near London.

Sp. 64. Plat. Taras. Mas et Fem. *Præcedentis statura, alæ ampliores obscuriores.*

Mas.—Ater, obscurus, subtilissime punctatus, pilis nonnullis albis hirtus, subtus lævior et nitidior: caput postice nitens, fere læve: oculi ocellique nigro-picei: antennæ nigræ; articulus 2^{us}. apice fucus: metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque pilis albis dense hirta: abdomen nitens, læve; segmentum 2^{um}. basi ultra medium scite sulcatum: pedes nigri; tarsi

nigro-picei ; spinæ tibiales rufæ ; propedum femora apice et tibiæ subtus rufo-picea : alæ subfuscæ, basi pallidiores ; metalæ sublimpidæ ; squamulæ nigro-piceæ.

Fem.—*Mari similis* : antennæ breviores : alæ minores. (Corp. long. lin. $\frac{3}{4}$ — $1\frac{1}{6}$; alar. lin. $1\frac{1}{3}$ — $1\frac{2}{3}$.)

Var. β.—*Mas et Fem.* profemora et protibiæ picea, subtus rufa.

Var. γ.—*Mas et Fem.* tibiæ basi rufo-piceæ ; propedes rufi coxis nigris, femoribus et tibiis supra piceo vittatis, tarsis piceis.

Var. δ.—*Mas et Fem.* sulci abdominales segmenti 2ⁱ. medium vix attingentes.

Var. ε.—*Fem.* Profemora apice et protibiæ subtus nigro-picea.

Var. ζ.—*Fem.* tibiæ basi et tarsi rufa, hi apice picei ; propedes rufi coxis nigris, femoribus basi tarsisque apice piceis.

Var. η.—*Fem.* tarsi picei ; propedum femora et tibiæ rufa supra piceo vittata, tarsi rufo-picei.

May; on grass in fields; near London.

Sp. 65. Plat. Orus. *Mas et Fem. Præcedente gracilior, alæ obscuriores angustiores.*

Mas.—Ater, obscurus, subtilissime punctatus, pilis nonnullis albis hirtus, subtus lævior et nitidior : oculi ocellique nigro-picei : antennæ nigræ ; articulus 2^{us}. apice fuscus ; metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque pilis albis hirta : abdomen nitens, læve ; segmentum 2^{um}. basi ultra medium scite sulcatum : pedes nigri ; tarsi nigro-picei ; propedes rufi, coxis nigris, femoribus tibiisque supra piceo vittatis, tarsis piceis : alæ fuscæ ; metalæ sublimpidæ ; squamulæ nigro-piceæ.

Fem.—*Mari similis* : antennæ breviores et tenuiores : abdomen paullo longius et angustius. (Corp. long. lin. $\frac{2}{3}$ —1; alar. lin. 1— $1\frac{1}{4}$.)

Var. β.—*Fem.* sulci abdominales segmenti 2ⁱ. medium non attin-gentes : protarsi rufi, apice picei.

Var. γ.—*Fem.* genua et tarsi rufo-picea.

Common in June; near London. Found in Ireland, by Mr. Haliday.

Sp. 66. Plat. Dictys. *Fem. Ater alis limpidis, P. Otani similis, antennæ breviores, abdomen longius, alæ paullo breviores et angustiores.*

Ater, longus, subtilissime punctatus, parce hirtus, parum nitens : caput obscurum, postice rugosum : oculi ocellique nigro-picei :

antennæ nigræ, corporis dimidio longiores; articulus 1^{us}. basi et apice 2^{us}. que apice fuscus: metathorax abdominisque segmentum 1^{um}. obscura, punctata: abdomen nitidum, lœve, glabrum; thorace paullo longius, segmentum 2^{um}. basi fere ad medium scite sulcatum; 3^{um}. et sequentia pilis nonnullis albis hirta: pedes nigri; genua et tarsi rufo-picea; protibiae et spinæ tibiales rufæ, illæ supra piceo vittatæ; metatarsi picei: alæ albæ; squamulæ piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{4}$.)

Found near London.

Sp. 67. Plat. Philinna. Fem. P. Otani *fem. similis*, *antennæ breviores, abdomen longius*.

Ater, longus, fere glaber: caput transverse rugosum, obscurum: oculi ocellique rufo-picei: antennæ nigræ, corporis dimidio breviores; articulus 2^{us}. apice fuscus: thorax ovatus, subtilissime punctatus, parum nitens: metathorax abdominisque segmentum 1^{um}. scabra obscura: abdomen longi-ovatum, lœve, nitens, thorace multo longius; segmentum 2^{um}. basi ad medium scite sulcatum: pedes nigri; genua et tarsi picea; propedum tibiæ et tarsi obscure rufa, hi apice et illæ supra picea: alæ albæ, sat latæ; squamulæ nigro-piceæ. (Corp. long. lin. 1; alar. lin. $1\frac{1}{4}$.)

Found near London.

Sp. 68. Plat. Cratinus. Fem. P. Pleuroni *similis*, *alæ angustiores*.

Ater, parum nitens, subtilissime squameus, fere glaber: oculi ocellique nigro-picei: antennæ nigræ, corporis dimidio longiores; articuli 1^{us}. et 2^{us}. apice picei: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen lœve, nitens, thorace longius; segmentum 2^{um}. basi scite sulcatum: oviductus fuscus: pedes nigri; tibiæ piceæ, apice basique rufæ; tarsi rufi, apice picei; profemora apice subtus rufa; spinæ tibiales rufæ: alæ sublimpidæ, angustæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$ — $\frac{5}{4}$; alar. lin. 1— $1\frac{1}{4}$.)

New Lanark, Scotland.

Sp. 69. Plat. Olorus. Mas et Fem. P. Oro *similis, minor*, *antennæ graciliores*.

Mas.—Ater, parum nitens, subtilissime punctatus, pilis albis parce hirtus: caput transverse rugosum, obscurum: oculi ocellique nigro-picei: antennæ nigræ, corporis dimidio multo longiores; articulus 2^{us}. apice pallidus: thorax utrinque et subtus nitidus, lœvis, postice utrinque albo pilosus: metathorax abdominisque seg-

mentum 1^{um}. rugosa, obscura: abdomen nitens, lœve, thorace paullo longius; segmentum 2^{um}. basi scite sulcatum: pedes nigri; profemora et protibiae obscure picea, hæ apice basique rufæ; genua rufo-picea; spinæ tibiales rufæ; tarsi rufi, apice picei; metatarsi supra pallide picei: alæ fuscæ; squamulæ nigro-piceæ.

Fem.—*Mari similis*: antennæ paullo breviores. (Corp. long. lin. $\frac{2}{3}$; alar. $1\frac{1}{4}$.)

Var. β.—*Mas*, Propedum femora et tibiæ rufa, medio supra picea.

Found near London.

Sp. 70. Plat. Sterope. Fem. P. Oloro *simillimus*, alæ angustiores.

Ater, parum nitens, subtilissime punctatus, parce et breviter pubescens: oculi ocellique nigro-picei: antennæ nigræ, capite thoraceque longiores; articulus 2^{us}. apice fuscus: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen nitens, lœve, glabrum, thorace paullo longius; segmentum 2^{um}. ejus fere totum occupans, basi scite sulcatum; sequentia brevissima, pilis nonnullis albis hirta: pedes nigri; genua et tarsi picea; propedum genua, tibiæ apice subtus et tarsi rufo-picea: alæ limpidæ, perangustæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{4}{5}$.)

Var. β.—Genua tarsique omnia piceo-rufa.

Found near London.

Sp. 71. Plat. Cebes. Mas. P. *Dictyi similitudine, antennæ graciliores, alæ angustiores obscuriores*.

Ater, longitudine mediocri, subtilissime punctatus, parum nitens, fere glaber: oculi ocellique picei: antennæ nigræ, corporis dimidio multo longiores; articuli 1^{us}. basi 2^{us}. que apice nigro-picei: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen lœve, nitens, thorace paullo longius; segmentum 2^{um}. basi scite sulcatum: pedes picei; genua pallidiora; coxæ nigræ: alæ subfuscæ, perangustæ; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $1\frac{1}{4}$.)

New Lanark, Scotland.

Sp. 72. Plat. Deipyala. Mas. P. *Præcedenti simillimus paullo brevior, antennæ graciliores, alæ obscuriores angustiores*.

Ater, parum nitens, subtilissime punctatus, parce et breviter pubescens: oculi ocellique nigro-picei: antennæ nigro-piceæ, capite

thoraceque longiores; articuli 1^{us}. basi 2^{us}. que apice pallidi: thorax subitus lœvis, nitens: metathorax abdominisque segmentum 1^{um}. scabra obscura: abdomen longi-ovatum, nitens, lœve, thorace paullo longius et latius; segmentum 2^{um}. glabrum, apice latius, basi scite sulcatum: pedes picei, unicolores: proalæ fuscæ, perangustæ; metalæ sublimpidæ; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

May; on grass beneath trees; near London.

Sp. 73. Plat. Eriphyle. Fem. P. Oro *similis*, *antennis articulus 7^{us}. sequentibus minor*.

Ater, latus, obscurus, subtilissime punctatus, fere glaber: oculi ocellique nigro-picei: antennæ nigræ, clavatae, capite thoraceque paullo longiores; articulus 2^{us}. apice fuscus: thorax subitus et utrinque lœvior nitidior: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen ovatum, nitidum, lœve, glabrum, acuminatum, thorace paullo longius et latius; segmentum 2^{um}. basi scite sulcatum: pedes nigro-picei; trochanteres, genua et tarsi pallidiora; protibiæ apice subtus rufæ: alæ albolimpidæ, breves; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Found near London.

Sp. 74. Plat. Evadne. Mas et Fem. P. Philinnæ *similis*, *alæ obscuriores*.

Mas.—Ater, angustus, longus, parum nitens, subtilissime punctatus, breviter pubescens, caput posticum sulcis transversis scite lineatum: oculi ocellique nigro-picei: antennæ nigræ, capite thoraceque vix longiores; articulus 2^{us}. apice fuscus: mesothoracis parapsidum suturæ bene determinatæ: metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque dense pubescentia: abdomen subfusiforme, nitens, lœve, glabrum, thorace multo longius; segmentum 2^{um}. ejus dimidio longius, basi scite sulcatum; sequentia brevia, subæqualia: pedes nigri; genua et tarsi nigro-picea: alæ fuscæ, angustæ; metalæ sublimpidæ; squamulæ nigro-piceæ.

Fem.—*Mari similis*: abdomen acutius et paullo longius: genua et protibiæ apice subtus rufa; tarsi picei. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{1}{2}$ — $\frac{3}{4}$.)

Var. β.—*Fem.* pedes nigro-picei; trochanteres, genua et tarsi piceo-rufa.

June and July; near London. New Forest, Hampshire.

Sp. 75. Plat. Cœclus. Mas et Fem. *Præcedenti similis,*
antennæ longiores, alæ latiores.

Mas.—Ater, latus, parum nitens, subtilissime squameus, parce et breviter pubescens: oculi ocellique nigro-picei: antennæ nigræ, capite thoraceque longiores; articuli 1^{us}. basi 2^{us}. que apice fusi: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen ovatum, convexum, nitidum, læve, glabrum, basi angustius; segmentum 2^{um}. basi scite sulcatum; 3^{um}. et sequentia brevissima: pedes nigri; trochanteres picei; genua et protarsi rufa, hi apice picei; protibiæ rufæ, supra piceæ: alæ subfuscæ aut sublimpidæ, sat latæ; metalæ limpidæ; squamulæ piceæ.

Fem.—*Mari similis*: abdomen longi-ovatum, supra convexum, postice abrupte angustum et acuminatum, subtus basi convexum apicem versus incurvum; segmentum 2^{um}. ejus fere dimidii longitudine, apice latius; 3^{um}. 2ⁱ. sextæ partis longitudine; 4^{um}. 3^o. longius; 5^{um}. adhuc longius; 6^{um}. 5^o. brevius, acuminatum: pedes nigri; trochanteres genua et tarsi picea, subtus pallidiora; progenua et protarsi piceo-rufa, hi apice obscuriores. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{2}{3}$ — $\frac{4}{5}$.)

Found in Ireland, by Mr. Haliday. May; near London.
New Lanark, Scotland.

Sp. 76. Plat. Bucalion. Mas. *Ater, pedes rufo-picei, alæ fuscæ latæ obtusæ.*

Ater subnitens, subtilissime punctatus, pilis nonnullis albis hirtus: caput obscurum, punctatum, postice scite rugosum: oculi ocellique nigro-picei: antennæ nigro-piceæ, corporis dimidio longiores; articuli 1^{us}. et 2^{us}. apice picei, ille basi rufus: mesothoracis parapsidum suturæ bene determinatæ: metathorax obscurus, punctatus, utrinque pilis albis vestitus: abdomen nitens, læve, glabrum, thorace paullo longius et angustius; segmenta 1^{um}. omnino 2^{um}. que basi scite sulcata; 3^{um}. et sequentia pilis nonnullis albis hirta: pedes rufo-picei; coxae nigro-piceæ; trochanteres, tibiæ apice basique et tarsi rufa, hi apice picei; protibiæ rufæ, supra apices versus piceæ: proalæ fuscæ; metalæ sublimpidæ; squamulæ rufo-piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1 $\frac{1}{2}$.)

Found near London.

†† *Mesothoracis parapsidum suturæ vix conspicuæ.*

Sp. 77. Plat. Abia. Mas et Fem. *Ater, pedes rufi, alæ limpidæ.*

Mas.—Ater, parum nitens, subtilissime punctatus, fere glaber, subtus lævior et nitidior: oculi ocellique nigro-picei: antennæ

nigræ, capite thoraceque longiores; articulus 1^{us}. rufus, apice supra piceus; 4^{us}. parum dilatatus: scutellum pilis albis hirtum: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen nitens, lœve, thorace longius et latius, basi utrinque pilis albis vestitum; segmentum 2^{um}. basi scite sulcatum: pedes rufi; coxae piceæ; femora et tarsi apice picea; tibiæ supra apices versus rufo-piceæ; alæ sublimpidæ, angustæ; squamulæ rufo-piceæ.

Fem.—*Mari similis*: antennæ piceæ, breviores; articuli 1°. ad 4^{um}. rufi: abdomen thorace vix longius: pedes rufi; coxae piceo-rufæ; tarsi apice picei. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Pedes rufi; coxae basi et tarsi apice picea.

New Lanark, Scotland. September; Cumberland.

Sp. 78. Plat. Oscus. Mas et Fem. P. Abiæ *similis*, alæ longiores et latiores.

Mas.—Ater, parum nitens, subtilissime punctatus, parce hirtus: oculi ocellique nigro-picei: antennæ omnino nigræ, sat graciles; articulus 4^{us}. parum dilatatus: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen nitens, lœve, pilis non-nullis albis hirtum; segmentum 2^{um}. glabrum, basi scite sulcatum: pedes rufi; coxae nigræ; femora pallide picea, apice basique rufa; tarsi apice picei: alæ sublimpidæ; squamulæ rufo-piceæ.

Fem.—*Mari similis*, paullo latior; antennæ paullo breviores, articuli 1^{us}. basi 4^{us}. que picei, 2^{us}. et 3^{us}. rufi. (Corp. long. lin. $\frac{1}{2}$ —1; alar. lin. $\frac{3}{4}$ —1 $\frac{1}{4}$.)

Var. β.—*Mas*, antennis articuli 1°. ad 6^{um}. pedesque omnino rufi.

Var. γ.—*Fem.* antennæ obscure piceæ; articuli 2^{us}. et 3^{us}. pallide picei, subtus rufi: profemora rufa; meso- et metatibiae pallide piceæ.

Var. δ. *Fem.* *Var. β.* *similis*: antennæ articulo 1°. rufo, 2°. et 3°. piceis.

Var. ε.—*Fem.* antennæ piceæ; articuli 1^{us}. apice et basi, 2^{us}. 3^{us}. que omnino rufi: profemora rufa.

Ireland, Mr. Haliday. Near London, England. New Lanark, Scotland.

Sp. 79. Plat. Lysicles. Fem. P. Osco *similis*, paullo latior.

Ater, parum nitens, subtilissime punctatus, fere glaber: oculi ocellique nigro-picei: antennæ nigræ, corporis dimidio paullo longiores;

articuli 1^o. ad 4^{um}. rufi : metathorax abdominisque segmentum 1^{um}. scabra, obscura : abdomen nitens, lave, pilis nonnullis albis hirtum, thorace paullo longius et latius ; segmentum 2^{um}. glabrum, basi scite sulcatum : pedes rufi ; coxae piceæ ; tarsi apice picei : alæ albidolimpidae ; squamulæ piceæ. (Corp. long. lin. $\frac{3}{4}$ —1 ; alar. lin. $1\frac{1}{2}$ — $1\frac{1}{2}$.)

Var. β.—Antennæ articulis 1^o. ad 4^{um}. supra pallide piceis.

Var. γ., *Var. β.*, similis : meso- et metapedes supra picei.

Var. δ., *Var. β.*, similis : metafemora supra picea.

Var. ε., *Var. β.*, similis : meso- et metapedum femora et tibiæ supra picea.

Var. ζ.—Antennæ articulo 5^o. piceo.

Var. η.—Antennæ articulis 1^o. ad 5^{um}. rufis.

Var. θ.—Antennæ articulis 5^o. ad 10^{um}. piceis.

Found in August by Mr. Haliday, in marshes and grass in drains, at Holywood, Ireland. September ; on grass in fields ; near London. Isle of Wight. New Lanark, Scotland.

Sp. 80. Plat. Vestinus. Mas. *Præcedenti similis, brevior, alæ fuscæ.*

Ater, parum nitens, subtilissime punctatus, fere glaber : oculi ocellique nigro-picei : antennæ nigro-piceæ, capite thoraceque paullo longiores ; articuli 1^o. ad 4^{um}. rufo-picei : metathorax abdominisque segmentum 1^{um}. scabra, obscura : abdomen nitens, lave, thorace paullo longius et latius ; segmentum 2^{um}. glabrum, basi utrinque impressum : pedes rufi ; coxae piceæ ; protarsi flavi ; unguis et pulvilli picei : alæ fuscæ ; squamulæ piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{4}$.)

September ; near the Land's End, Cornwall.

Sp. 81. Plat. Nisus. Fem. P. Osco *similis at ejus dimidio minor.*

Ater, parum nitens, subtilissime punctatus, fere glaber : oculi ocellique nigro-picei : antennæ piceæ, corporis dimidio multo longiores, validæ ; articuli 1^o. ad 4^{um}. rufi : thorax subitus et utrinque lavis, nitens : metathorax obscurus, punctatus : abdomen lave, nitens, glabrum, thorace paullo longius ; segmenta 1^{um}. omnino 2^{um}. que basi scite sulcata ; 3^{um}. et sequentia pilis nonnullis albis hirta : pedes rufi ; tarsi apice picei : alæ hyalinæ, albidæ ; squamulæ rufo-piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found near London.

§§ *Thorax lœvis, nitens.*

Sp. 82. Plat. Ægeus. Fem. *Ater, pedes picei, tarsi rufi, alæ albo-limpidæ.*

Ater, nitens, lœvis, parce et breviter hirtus : oculi nigro-picei : antennæ nigrae, extrorsum crassiores, corporis dimidio paullo longiores ; articuli 1^{us}. basi et apice 2^{us}. que apice et subtus picei : thorax ovatus : mesothoracis parapsidum suturæ conspicuæ : abdomen coeleatum, thorace dimidio longius ; segmentum 1^{um}. sulcatum, utrinque hirtum ; 2^{um}. basi minime sulcatum ; 3^{um}. et sequentia brevia : pedes picei ; coxae et femora nigra ; trochanteres apice rufi ; tarsi et protibiae rufa, illi apice picei : alæ albo-limpidæ ; squamulæ nigro-piceæ. (Corp. long. lin. 1 ; alar. lin. 1½.)

Found in Ireland, by Mr. Haliday.

Sp. 83. Plat. Ennius. Fem. *P. Ægeo brevior et multo minor.*

Ater, nitens, lœvis, parce hirtus : caput postice scite sulcatum : oculi nigro-picei : antennæ piceæ, subclavatae, corporis dimidio longiores ; articulus 1^{us}. niger, apice piceus ; 3^{us}. flavus : thorax ovatus : mesothoracis parapsides scuto in unum confusæ ; scutellum hirtum : metathorax scaber : abdomen longi-ovatum, thorace paullo longius ; segmentum 1^{um}. omnino 2^{um}. que basi scite sulcata ; 3^{um}. et sequentia brevissima : pedes flavi ; coxae et femora picea, hæ apice flava ; meso- et metatibiæ piceo cingulatae ; tarsi apice picei : alæ albo-limpidæ ; squamulæ piceæ. (Corp. long. lin. 1 ; alar. lin. ¾.)

Found in Ireland, by Mr. Haliday.

Sp. 84. Plat. Minthe. Fem. *Ater, antennæ et pedes nigro-picea, tarsi rufi, alæ limpidæ.*

Ater, nitens, lœvis, breviter pubescens : caput posticum transverse striatum : oculi ocellique nigro-picei : antennæ nigro-piceæ, capite thoraceque longiores ; articulus 2^{us}. apice fuscus : metathorax abdominisque segmentum 1^{um}. scabra, obscura : abdomen lœve, nitidissimum, glabrum, thorace longius, apicem versus latius ; segmentum 2^{um}. basi utrinque foveolatum ; sequentia brevissima : pedes nigro-picei ; coxae nigrae ; femora basi et trochanteres rufo-picea ; tibiæ basi et tarsi rufa, hi apice picei : alæ limpidæ ; squamulæ piceæ. (Corp. long. lin. ¾ ; alar. lin. 1¼.)

Found near London.

Sp. 85. Plat. Cleodæus. Mas et Fem. *Præcedente multo brevior, alæ limpidiiores.*

Mas.—Ater, nitens, lœvis, fere glaber : caput posticum transverse lineatum : oculi ocellique obscure picei : antennæ nigræ, corpore breviores ; articuli 1^{us}. basi et apice 2^{us}. que apice fulvi : metathorax abdominisque segmentum 1^{um}. scabra, obscura : abdomen thorace paullo longius ; segmentum 2^{um}. basi scite sulcatum : pedes nigro-picei ; coxæ nigræ ; genua et tarsi rufa, hi apice fuscæ ; mesotibiae piceæ ; protibiae rufæ, medio supra piceæ : alæ limpidae ; squamulæ piceæ.

Fem.—Mari similis : antennæ paullo breviores et graciliores, omnino nigræ : metafemora nigra ; mesotibiae nigro-piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Found near London.

Sp. 86. Plat. Abisares. Mas et Fem. P. Cleodæo *similis*, *alæ angustiores.*

Mas.—Ater, nitens, fere lœvis, parce et breviter pubescens : oculi ocellique nigro-picei : antennæ nigræ, capite thoraceque longiores ; articulus 2^{us}. apice fuscus ; 4^{us}. dilatatus : mesothoracis parapsidum suturæ vix conspicuae : metathorax abdominisque segmentum 1^{um}. scabra, obscura : abdomen lœve, thorace latius et paullo longius ; segmentum 2^{um}. glabrum, basi scite sulcatum : pedes nigro-picei ; genua et tarsi rufo-picea ; protibiae apice et protarsi basi rufa : alæ sublimpidæ ; squamulæ piceæ.

Fem.—Antennæ breviores, capite thoraceque vix longiores : abdomén longi-ovatum, thorace longius non latius ; segmentum 3^{um}. et sequentia brevia, subæqualia : pedes nigri ; genua et tarsi picea ; protibiae apice et protarsi rufo-picea. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—*Mas*, tarsi rufi, apice picei.

Autumn ; near London. Isle of Wight. Land's End, Cornwall. Found in Ireland, by Mr. Haliday.

Sp. 87. Plat. niger. Mas et Fem. *Præcedenti similis at latior, alæ quoque multo latiores.*

Platygaster niger . . Nees ab Esenbeck, Hym. Ich. affin. Monogr. II. 304. 12.

Mas.—Ater, nitens, lœvis, brevis, latus, convexus ; pilis albis hirtus : caput posticum scite rugosum : oculi ocellique nigro-picei : antennæ nigræ, graciles, corpore breviores : thorax seorsum

convexum : mesothoracis parapsidum suturæ conspicuae : metathorax abdominisque segmentum 1^{um}. rugosa, obscura : abdomen glabrum, thoracis latitudine et longitudine ; segmentum 2^{um}. basi scite sulcatum ; 3^{um}. et sequentia pilis nonnullis albis hirta : pedes nigri ; spinæ tibiales rufæ ; genua et tarsi nigro-picea ; protarsi picei : alæ limpidæ, mediocres ; squamulæ nigro-piceæ.

Fem.—*Mari* similis : antennæ paullo breviores : abdomen thorace multo longius, apice acuminatum. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—*Mas*, protibiæ apice et protarsi rufo-picea.

Var. γ.—*Fem.* tarsi picei ; protibiæ apice et protarsi rufa, hi apice et illæ supra picea.

Found in Ireland, by Mr. Haliday. Common in summer and autumn ; near London. September ; Cumberland.

Sp. 88. Plat. Manto. *Mas et Fem.* *P. nigro minor angustior, alæ minores.*

Mas.—Ater, nitens, lœvis, fere glaber : caput parum nitens, postice transverse sulcatum : oculi ocellique rufo-picei : antennæ nigræ, corporis dimidio multo longiores ; articulus 2^{us}. apice fuscus : mesothoracis parapsidum suturæ vix conspicuae : metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque pilosa : abdomen thorace paullo longius ; segmentum 2^{um}. basi scite sulcatum : pedes nigri ; trochanteres, genua et tarsi picea ; pro-pedes rufo-picei coxis nigris : alæ albo-limpidæ ; squamulæ piceæ.

Fem.—*Mari* similis : profemora nigra ; antennæ breviores et graciliores ; abdomen paullo latius. (Corp. long. lin. $\frac{1}{4}$ — $\frac{1}{2}$; alar. lin. $\frac{1}{3}$ — $\frac{5}{4}$.)

Var. β.—*Mas*, protibiæ et protarsi flava, hi apice et illæ supra picea.

Var. γ.—*Mas et Fem.* tarsi flavi, apice picei.

Var. δ.—*Fem.* meso- et metapodium genua et tarsi nigro-picea.

From spring to autumn ; on grass in fields ; near London. September ; Isle of Wight. New Lanark ; Scotland. Found in Ireland, by Mr. Haliday.

Sp. 89. Plat. Strato. *Mas et Fem.* *Præcedente gracilior, alæ angustiores.*

Mas.—Ater, nitens, lœvis, fere glaber : oculi ocellique nigro-picei : antennæ nigræ, corpore paullo breviores ; articuli 1^{us}. basi 2^{us}. que

apice fuscæ : mesothoracis parapsidum suturæ vix conspicuæ : metathorax abdominisque segmentum 1^{um}. secura obscura : abdomen glabrum, thoracis longitudine ; segmentum 2^{um}. basi scite sulcatum ; 3^{um}. et sequentia pilis nonnullis albis vestita : pedes nigro-picei ; trochanteres picei ; genua, tibiæ apice basique et tarsi rufa, hi apice picei ; propedum femora apice rufa, tibiæ rufæ piceo cingulatae : alæ limpidæ ; squamulæ rufo-piceæ.

M. m. — *Mari* similis : antennæ graciliores breviores. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{1}{2}$ — $\frac{3}{4}$.)

M. r. β. — *Mas*, tarsi supra picei.

New Lanark, Scotland.

Sp. 90. Plat. Laricis. (Haliday MSS.) Mas. *Ater, antennæ piceæ, pedes rufi, alæ limpidæ.*

Ater, nitens, laevis, fere glaber : oculi nigro-picei : antennæ pallide piceæ, corporis dimidio longiores, extrosum crassiores ; articulus 1^{us}. flavus ; 2^{us}. et sequentes ad 5^{um}. fulvi ; 7^{us}. et sequentes lati, quasi nodosi : thorax ovatus, postice hirtus : metathoracis scutellum acuminatum : abdomen glabrum, thorace longius non latius ; segmenta 1^{um}. omnino 2^{um}. que basi sulcata : pedes fulvi ; tarsi flavi, apice fuscæ : alæ limpidæ ; squamulæ obscure rufæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{3}{4}$.)

Found in Ireland, by Mr. Haliday.

Sp. 91. Plat. Euhemerus. Fem. *Abdomen quam præcedentibus longius.*

Ater, nitens, laevis, parce et breviter pubescens : oculi ocellique nigro-picei : antennæ nigræ, capite thoraceque longiores ; articulus 2^{us}. apice fuscus : mesothoracis parapsidum suturæ vix conspicuæ ; scutellum magnum, dense pubescens, postice prominulum : metathorax abdominisque segmentum 1^{um}. secura, obscura : abdomen longi-ovatum, glabrum ; segmentum 2^{um}. basi scite sulcatum : pedes nigro-picei ; coxae nigræ ; tibiæ basi rufæ ; protibiæ rufæ, supra piceæ ; tarsi rufi, apice metatarsi quoque supra picei : alæ limpidæ ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{3}{4}$.)

Found near London.

Sp. 92. Plat. Athamas. Fem. *Præcedente crassior, antennæ paullo breviores.*

Ater, nitens, laevis, parce et breviter pubescens : oculi ocellique nigro-picei : antennæ nigræ, sat late, capite thoraceque longiores :

thorax altus : mesothoracis parapsidum suturæ vix conspicuae : metathorax abdominisque segmentum 1^{um}. scabra, obscura : abdomen læve, glabrum, ovato-fusiforme, thorace longius angustius et minus convexum ; segmentum 2^{um}. ejus dimidium occupans ; sequentia brevia, subæqualia : pedes nigri ; genua et tarsi nigro-picea ; progenua et protarsi rufo-picea, hi apice obscuri : alæ albo-limpidæ ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Found near London.

Sp. 93. Plat. Plotinus. Mas et Fem. *Ater, tarsi nigro-picei, alæ fuscæ latæ.*

Mas. — Ater, nitens, lævis, pilis nonnullis albis hirtus : caput transverse rugosum : oculi ocellique nigro-picei : antennæ nigræ : metathorax obscurus, punctatus : abdomen thorace paullo longius et latius ; segmentum 1^{um}. omnino 2^{um}. que basi scite sulcata : pedes nigri ; tarsi nigro-picei ; protibiæ apice et spinæ tibiales rufæ ; protarsi picei : alæ fuscæ, latæ, obtusæ ; squamulæ nigro-piceæ.

Fem. — *Mari* similis : antennæ breves, corporis dimidio paullo longiores : abdomen thorace multo longius ; sulci ejus segmenti 2ⁱ. medium attingentes. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ — $1\frac{1}{6}$)

Var. β. — *Mas*, propedum femora et tibiæ picea apice subtus rufa, tarsi rufi apice picei.

Var. γ. — *Mas*, propedum femora et tibiæ rufa, supra piceo vittata.

Var. δ. — *Mas*, alæ subfuscæ.

Var. ε. — *Fem.* tibiæ basi rufo-piceæ : sulci abdominales segmenti 2ⁱ. medium vix attingentes.

Found near London.

Sp. 94. Plat. Pedasus. Fem. P. Plotino *gracilior, tarsi rufi.*

Ater, nitens, lævis, breviter pubescens : caput parum nitens : oculi ocellique nigro-picei : antennæ nigro-piceæ, capite thoraceque longiores ; articuli 1^{us}. basi 2^{us}. que apice fusci : mesothoracis parapsidum suturæ vix conspicuae : metathorax abdominisque segmentum 1^{um}. scabra, obscura : abdomen thorace paullo longius ; segmentum 2^{um}. glabrum, basi scite sulcatum : pedes picei ; coxæ nigræ ; protibiæ apice subtus, genua et tarsi rufa, hi apice picei : alæ subfuscæ ; metalæ sublimpidæ ; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Var. β. — Femora tibiæque basi rufa: meso- et metatarsi piceorufi.

July; on grass in fields; near London.

Sp. 95. Plat. Zosine. Mas. *Præcedentis statura, antennæ et pedes nigra.*

Ater, nitens, lœvis, pilis nonnullis albis hirtus: caput transverse rugosum: oculi ocellique nigro-picei: antennæ nigræ; articulus 4^{us}. parum dilatatus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax abdominisque segmentum 1^{um}. obscura, punctata: abdomen thorace longius non latius; segmentum 2^{um}. basi scite sulcatum: pedes nigri; tarsi nigro-picei; protibiae apice rufo-piceæ: alæ fuscæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found near London.

Sp. 96. Plat. Dryope. Mas. *Præcedente minor et brevior, tarsi pallidiores.*

Ater, nitens, lœvis, glaber: oculi nigro-picei: antennæ nigræ, extrorsum crassiores, corporis dimidio longiores; articuli 1^{us}. basi 2^{us}. que apice picei: mesothoracis parapsidum suturæ non bene determinatae: metathoracis scutellum acuminatum: abdomen ovatum, thorace paullo latius et longius; segmentum 1^{um}. scabrum; 2^{um}. basi scite sulcatum: pedes nigri; trochanteres et genua rufa; tarsi picei; propedum genua, tibiæ apice et subtus tarsique flava, hi apice picei: proalæ subfuscæ; metalæ limpidæ; squamulæ piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Found in Ireland, by Mr. Haliday.

Sp. 97. Plat. inermis. (Haliday, Curtis' Brit. Ent. 309.)

Mas et Fem. P: Zosines *statura et coloribus, alæ angustiores.*

Mas. — Ater, nitens, lœvis, fere glaber: oculi ocellique nigro-picei: antennæ nigræ, graciles, subfiliformes, capite thoraceque paullo longiores; articulus 2^{us}. apice fuscus; 4^{us}. dilatatus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen ovatum, nitens, lœve, glabrum, thorace multo longius, apice latius; segmentum 2^{um}. ejus dimidio longius, basi scite sulcatum; 3^{um}. brevissimum; sequentia paullo longiora; 6^{um}. acuminatum: pedes nigri; genua et tarsi nigro-picea; propedum genua, tibiæ subtus apice et tarsi

piceo-rufa : alæ fuscæ ; metalæ sublimpidæ ; squamulæ nigro-piceæ.

Fem.—*Mari similis*, breviter pubescens : antennæ apice latæ : abdomen fusiforme. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{3}$; alar. lin. $\frac{2}{3}$ — $\frac{3}{3}$.)

Var. β.—*Fem.* genua et tarsi omnia nigro-picea.

May ; on grass beneath trees ; near London. Found in Ireland, by Mr. Haliday.

Sp. 98. Plat. Sagana. Mas et Fem. *Præcedente minor gracilior*, alæ angustiores limpidiores.

Ater, nitens, lævis, parce et brevissime pubescens : oculi ocellique nigro-picei : antennæ nigræ, corporis dimidio paullo longiores ; articulus 2^{us}. apice fuscus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax abdominisque segmentum 1^{um}. obscura, punctata : abdomen longi-ovatum, angustum, nitens, læve, glabrum, thorace longius ; segmentum 1^{um}. omnino 2^{um}. que basi scite sulcata : pedes nigri ; genua et tarsi nigro-picea ; protibiæ apice rufo-piceæ ; spinæ tibiales rufæ : proalæ subfuscæ ; metalæ sublimpidæ, angustæ, parvæ ; squamulæ piceæ.

Fem.—*Mari similis* : abdomen acutius ; segmentum 2^{um}. ejus plus dimidium occupans ; sequentia brevia, subæqualia ; 6^{um}. paullo longius acuminatum. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{2}{3}$.)

July ; on grass in fields ; near London.

Sp. 99. Plat. Ilione. Mas. *Præcedenti similis*, antennæ multo longiores.

Ater, fere planus, nitens, lævis, parce et breviter pubescens : oculi ocellique nigro-picei : antennæ nigræ, corporis dimidio multo longiores ; articuli 1^{us}. apice et basi 2^{us}. que apice fusci ; 4^{us}. parum dilatatus : mesothoracis parapsidum suturæ vix conspicuæ ; scutellum fere planum : metathorax abdominisque segmentum 1^{um}. obscura punctata : abdomen nitens, læve, glabrum, thorace paullo longius ; segmentum 2^{um}. basi scite sulcatum : pedes nigri ; femora basi apiceque et trochanteres picea ; tibiæ basi apiceque, spinæ tibiales et tarsi rufa, hi apice picei ; protibiæ rufæ, nigro cingulatae : alæ subfuscæ ; squamulæ rufo-piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{2}{3}$.)

Found near London.

GENUS II.—INOSTEMMA, *Haliday.*

Psilus, Jurine. Platygaster, Latreille, &c.

Proalæ cuique nervus unicus basalis proxime sub costam, alæ triente paullo brevior, stigmate terminatus.

† *Antennæ 10-articulatæ.*

Div^o. 1^a.

Mas.—Corpus parce et breviter pubescens: caput breve, transversum, thoracis latitudine, antice vix productum, postice concavum: antennæ moniliformes, capitis thoracisque longitudine; articuli 2^o. ad 9^{um}. cyathiformes; 2^{us}. et 3^{us}. mediocres; 4^{us}. et 5^{us}. paullo minores; 6^{us}. et sequentes latiores, discreti; 10^{us}. angusti-ovatus, acuminatus, 9^o. longior: thorax ovatus, convexus: prothorax parvus, supra brevissimus, utrinque longior: mesothoracis parapsidum suturæ conspicuæ; scutellum fere planum, non prominens, semicirculum fingens: metathorax mediocris: abdomen angusti-ovatum, thorace paullo longius, basi angustius; segmentum 1^{um}. breve, lineare; 2^{um}. maximum, abdominis plus dimidium occupans; sequentia brevia, subæqualia: alæ mediocres; humerus simplex.

Fem.—Caput et thorax abdominis cornu receptione sulcata: antennæ clavatae, capitis thoracisque vix longitudine; articuli 2^o. ad 4^{um}. longi-cyathiformes, angusti; 5^{us}. et 6^{us}. multo breviores, non latiores; 7^{us}. multo latior; 8^{us}. et 9^{us}. adhuc latiores; 10^{us}. ovatus, vix acuminatus: abdomen acuminatum, quam *mari* longius, apice paullo elevatum; segmentum 2^{um}. ejus dimidium occupans; 3^{um}. et 4^{um}. brevia; 5^{um}. et 6^{um}. longiora: segmenta ventralia eodem modo disposita, marginem utrinque fingentia: cornu arcuatum, levissime striatum, segmenti 1ⁱ. dorso affixum, thorace applicatum et caput attingens: oviductus abdomine duplo longior, in cornu receptus?

The female in this division has a horn rising from the first segment of the abdomen, and bending over the thorax to the head. Its use has not yet been ascertained; Leclerc de Laval supposed that it incloses the ovipositor; but Nees ab Esenbeck denies this.

Sp. I. Ino. Boscii. *Mas et Fem. Atra, fem. cornu caput postice attingens, alæ albo-limpidae.*

Psilus *Boscii* . . *Jurine, Hymen*, 318.

Platygaster *Boscii*. *Latr. Règne Anim.* III. 475; *Nouv. Edit.* V. 302; *Encycl. Method.* X. 150; *Curtis' Brit. Ent.* 309; *Nees ab Esenbeck, Hym. Ich. affin. Monogr.* II. 306. 14.

Atra, obscura, subtilissime squamea, fere glabra: oculi nigro-picei: ocelli pallide rufi: antennæ nigræ; articulus 2^{us}. apice fuscus: thorax utrinque et subtus lævis, nitens: abdominis segmentum 1^{um}. scabrum, sulcatum; 2^{um}. nitens, læve, glabrum, basi scite sulcatum; sequentia subtilissime punctata, apice lævia nitentia, pilis albis parce et breviter hirta: oviductus pallide flavus: pedes picei; coxæ nigræ; tibiae basi et tarsi rufa, hi apice picei; metatarsi supra rufo-picei: alæ albo-limpidæ; squamulæ et nervi picea. (Corp. long. lin. $\frac{1}{2}$ —1; alar. lin. $\frac{2}{3}$ —1 $\frac{1}{2}$)

Var. β.—*Mas* et *Fem.* tarsi omnes necnon protibiæ basi et apice rufa.

Var. γ.—*Mas*, mesotarsi supra picei.

On grass in woods, near London; during the summer and autumn. June; New Forest, Hampshire. New Lanark, Scotland. Found by Mr. Haliday, on *Cerealia*, in England, Ireland, and Scotland.

Sp. 2. Ino. *Melicerta*. Fem. *Abdomen quam P. Boscii brevius, cornu caput non attingens, alæ subfuscæ*.

Atra, obscura, subtilissime squamea, fere glabra: oculi nigro-picei: ocelli pallide rufi: antennæ nigræ: thorax utrinque et subtus lævis, nitens: abdomen quam *P. Boscii brevius*, apice minus acuminatum et elevatum; segmentum 1^{um}. scabrum, sulcatum; 2^{um}. nitidum, læve, glabrum, basi scite sulcatum; sequentia subtilissime punctata, apice lævia nitida, pilis albis parce et breviter hirta: cornu caput vix attingens: pedes picei; coxæ nigræ; tibiæ basi tarsique piceo-rufa; protibiæ apice et protarsi rufa, hi apice picei: alæ subfuscæ; metalæ sublimpidæ; squamulæ et nervi picea. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. $\frac{4}{5}$ —1.)

Var. β.—Tarsi omnes rufi, apice picei.

June and July; near London.

Sp. 3. Ino. *Lycon*. Fem. *P. Boscii similis, cornu caput fere superans*.

Atra, obscura, subtilissime squamea, fere glabra: oculi nigro-picei: ocelli pallide rufi: antennæ nigræ; articulus 2^{us}. apice fuscus:

thorax utrinque et subitus lœvis, nitens: abdominis segmentum 1^{um}. scabrum, sulcatum; 2^{um}. nitens, lœve, glabrum, basi scite sulcatum; sequentia subtilissime punctata, apice lœvia nitentia, pilis albis parce et breviter hirta: cornu caput fere superans: pedes picei; coxae nigrae; tibiae basi et tarsi piceo-rufa: protibiae apice et protarsi rufa, hi apice picei: alæ albo-limpidæ; squamulæ et nervi picea. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Found near London.

Sp. 4. Ino. Menippus. Mas et Fem. *Præcedenti simillima, alæ fuscæ.*

Atra, obscura, subtilissime squamea, fere glabra: oculi nigro-picei: ocelli pallide rufi: antennæ nigræ, mari capite thoraceque longiores, articuli 2^{us}. et 3^{us}. mediocres subæquales, 4^{us}. dilatatus, 5^{us}. et sequentes subæquales: thorax utrinque et subitus lœvis, nitens: abdominis segmentum 1^{um}. scabrum, sulcatum; 2^{um}. nitens, lœve, glabrum, basi scite sulcatum; sequentia subtilissime punctata, apice lœvia nitentia, pilis albis parce et breviter hirta: cornu caput fere superans: pedes nigro-picei; coxae nigrae: alæ fuscæ, quam *I. Boscii* angustiores; squamulæ et nervi nigro-picea. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{5}{4}$ —1.)

Var. β.—Fem. trochanteres, genua et tarsi picea.

Var. γ.—Fem. genua et tarsi rufo-picea.

July; on grass in woods; near London. It is sometimes infested by a small red parasite.

Div^o. 2^a.

Fem.—Antennæ capitatae, capite thoraceque breviores; articulus 2^{us}. cyathiformis, mediocris; 3^{us}. et sequentes ad 6^{um}. minimi; 7^{us}. et sequentes magni, lati, approximati, clavam fingentes longiovatum; 10^{us}. subtrigonus, 9^o. longior, vix acuminatus: thorax brevi-ovatus, convexus; mesothoracis parapsidum suturæ conspicuae; scutellum semicirculum fingens, non prominens: metathorax brevis: abdomen oviforme, inerme, supra subtusque valde convexum, apice acuminatum; segmentum 1^{um}. breve, sublineare; 2^{um}. maximum; sequentia brevia: alæ mediocres; humerus simplex.

Ichneumon inserens, Kirby, (Linn. Trans. V. 107,) is allied to the following species; but according to the description and figure, it has the tip of the first joint of the antennæ dilated and divided.

Sp. 5. Ino. scrutator. Fem. *Atra, tarsi rufi, alæ fuscæ.*

Atra, subtilissime squamea, parum nitens, breviter pubescens : oculi ocellique nigro-picei : antennæ nigræ ; articulus 2^{us}. apice fuscus : metathorax longius pilosus : abdomen nitens, læve, glabrum, thorace longius et angustius, apice fuscum ; segmentum 1^{um}. obscurum, sulcatum, pubescens ; 2^{um}. basi scite sulcatum : pedes picei ; coxæ nigræ ; tibiæ basi tarsique rufa, hi apice picei ; protibiæ apice subtus rufæ ; metatarsi supra rufo-picei : alæ fuscæ ; squamulæ et nervi nigro-picea. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Tarsi omnes supra rufo-picei.

Var. γ.—Metatarsi supra rufo-picei.

Var. δ.—Pedes nigro-picei ; coxæ nigræ ; tarsi picei ; protarsi pallidiores.

June; on grass in woods; near London. Found rarely by Mr. Haliday, on *Cerealia*, at Hollywood, in Ireland.

Div^o. 3^a.

Mas.—Corpus mediocre, parce et breviter pubescens : caput fere læve thoracis latitudine : antennæ moniliformes, extrorsum crassiores, corporis dimidio paullo longiores ; articulus 1^{us}. longus, subfusiformis, gracilis ; 2^{us}. cyathiformis ; 3^{us}. minutus ; 4^{us}. mediocris ; 5^{us}. et sequentes ad 9^{um}. majores, latescentes ; 10^{us}. conoides, acuminatus, 9°. multo longior : thorax brevi-ovatus, subtilissime squameus, parum convexus : prothorax brevissimus, supra vix conspicuus : mesothoracis parapsidum suturæ non bene determinatae ; scutellum parvum, planum, semicirculum fingens : metathorax mediocris : abdomen cochleatum, læve, planum, thorace vix longius ; segmentum 1^{um}. breve ; 2^{um}. glabrum, maximum, basi scite sulcatum ; 3^{um}. et sequentia brevia, subæqualia : pedes graciles : alæ mediocres : humerus ramulum emittens in alæ discum recte declivem.

Fem.—Antennæ clavatae, corporis dimidio multo breviores ; articuli 3°. ad 7^{um}. minimi, brevissimi, latescentes ; 8^{us}. et sequentes maximi, lati ; 10^{us}. conoides, 9°. paullo longior : abdomen ovatum, thorace duplo longius, apice quasi caudam fingens ; segmentum 1^{um}. brevissimum ; 2^{um}. omnino læve ; apicalia gracillima, cylindrica, teretia.

Sp. 6. *Ino. areolata*. (Haliday, MSS.) Mas et Fem. *Atra, tarsi picei, alæ subfuscæ*.

Atra: caput et thorax parum nitentia: antennæ nigræ; articulus 1^{us}. basi piceus: abdomen nitens: oviductus rufo-piceus; vaginæ nigræ: pedes nigri; genua et tarsi picea; protarsi nigri: proalæ subfuscæ; squamulæ nigro-piceæ: nervi pallidiores; metalæ sublimpidæ. (Corp. long. lin. $\frac{1}{2}$ — $\frac{1}{2}$; alar. lin. $\frac{2}{3}$ — $\frac{3}{4}$.)

Found by Mr. Haliday, on grass in drains of the sea-coast, at Holywood, in Ireland; sometimes, like *Ino. Menippus*, infested by a small red parasite.

Div^o. 4^a.

Fem.—Corpus breve, crassum: caput thoracis latitudine: antennæ clavatae, corporis dimidio paullo longiores; articulus 1^{us}. gracilis, fere filiformis; 2^{us}. cyathiformis; 3^{us}. parvus; 4^{us}. et sequentes æquales, mediocres, subquadrati; 10^{us}. a cuminatus, 9°. duplo fere longior: thorax brevi-ovatus, convexus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae; scutellum tuberculo simile: metathorax brevis: abdomen ovatum, convexum, thorace paullo brevius et angustius; segmentum 2^{um}. magnum; 1^{um}. 3^{um}. etc. parva: alæ mediocres: humerus ramulum emittens in alæ discum recte declivem.

Sp. 7. *Ino. Atinas*. Fem. *Atra, antennæ nigro-fuscæ, pedes fusci, alæ subfuscæ*.

Atra, subtilissime punctata, parum nitens, parce et brevitur pubescens: oculi nigro-picei: antennæ nigro-fuscæ; articuli 1^{us}. basi 2^{us}. que apice fulvi: abdomen nitens, lœve, glabrum: pedes fusci; trochanteres, genua, protibiae apice subtus tarsique fulva, hi apice obscuriores: alæ subfuscæ; squamulæ nigro-piceæ; nervi fusci. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found near London.

†† *Antennæ 9-articulatæ*.

Div^o. 5^a.

Mas.—Antennæ 9-articulatæ, moniliformes; articulus 1^{us}. validus, fusiformis; 2^{us}. parvus, globosus; sequentes verticillato-pilosæ, valde remoti; 3^{us}. magnus, brevi-fusiformis; 9^{us}. acuminatus: 8^o. multo longior, thorax latus, brevi-ovatus, supra planus: prothorax brevissimus: mesothoracis parapsidum suturæ vix

conspicuae: scutellum breve, quasi semicirculum fingens: metathorax mediocris, utrinque angulatus: abdomen longi-ovatum, convexum, thorace multo angustius; segmentum 1^{um}. breve, latum; 2^{um}. maximum; sequentia brevissima subclavata; tibiae tarsique gracilia.

Sp. 8. Ino. Mecrida. Mas et Fem. *Atra, pedes nigri tarsi picei, albo-limpidæ.*

Mas.—Atra, brevis, lata, nitens, laevis, fere glabra: oculi ocellique nigro-picei: antennæ nigræ, easdem *Eurytomæ* simulantes, corpore paullo breviores; articulorum petioli picei: metathorax abdominisque segmentum 1^{um}. scabra, obscura; 2^{um}. basi scite sulcatum: pedes nigri; genua et tarsi picea; propedes picei, genua, tibiae apice subtus et tarsi flava: alæ albo-limpidæ; squamulæ et nervi picea. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$.)

Found near London.

** *Tarsi tetrameri.*

GENUS III.—IPHITRACHELUS, *Haliday.*

Mas.—Corpus breve, latum: caput thoracis latitudine: oculi prominentes: antennæ 10-articulatæ, nodosæ, verticillato-pilosæ, easdem *Eurytomæ* simulantes, corpore paullo breviores; articulus 1^{us}. crassus, quasi membrana inclusus; 2^{us}. parvus, fere rotundus; 3^{us}. major, longi-ovatus; 4^{us}. adhuc major, dilatatus; 5^{us}. et 4^{us}. sequentes æquales, discreti; 10^{us}. fusiformis, acuminatus, 9°. duplo longior: thorax brevis, convexus, paullo longior quam latus: prothorax supra inconspicuus: mesothoracis parapsidum suturæ bene determinatae; scutellum gibbum, fere rotundum, scuto discretum: metathorax mediocris; stria supra dorsum membranacea, quasi foveas 3 fingens: abdomen longi-ovatum, sublineare, fere planum, thorace multo angustius; segmentum 1^{um}. breve, membrana tectum; 2^{um}. maximum, dorsum fere omne occupans; 3^{um}. et sequentia brevissima: pedes graciles; femora subclavata; tarsi tetrameri, articuli 1°. ad 3^{um}. longitudine decrescentes, 4^{us}. 3°. paullo longior, unguis et pulvilli minimi: proalæ humerus brevis, simplex, capitatus.

Sp. 1. Iphi. Lar. (*Haliday.*) Mas. *Ater, pedes flavi, alæ fuscæ.*

Ater, obscurus, glaber, scitissime squameus: caput breve: oculi ocellique nigro-picei: antennæ nigræ; articulus 1^{us}. fulvus; 2^{us}.

fuscus : spatium inter mesothoracis scutum et scutellum lœve, nitens; metathorax et abdomen lœvia, nitentia, hoc thoracis longitudine; membrana fulva: pedes flavi; tarsi apice fusti; protarsi pallidiores: alæ fuscæ, latæ, apice obtuse; squamulæ et nervi picea. (Corp. long. lin. $\frac{1}{5}$; alar. lin. $\frac{2}{3}$.)

Found in August, by Mr. Haliday, in the Isle of Arran, Scotland.

ADDENDA.

DIV^o. 10^a.

Sp. 100. Plat. cochleatus. Fem. *Ater, antennæ pedesque flava, illæ apice fuscæ, alæ limpidæ.*

Ater, nitens, lœvis, pubescens: caput subtilissime squameum, fere glabrum: oculi nigro-picei: antennæ flavæ, corporis dimidio paullo longiores; articuli 7^o. ad 10^{um}. fusti, subtus pallidiores: thorax dense pubescens: mesothoracis parapsides scuto in unum confusæ: metathorax abdominisque segmentum 1^{um}. scabra, obscura, pubescentia: abdomen lœve, glabrum: pedes flavi; unguis et pulvilli pallide fusti: alæ limpidæ; squamulæ piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1 $\frac{1}{3}$.)

Found at Holywood, in Ireland, by Mr. Haliday.

DIV^o.

Sp. 101. Plat. Hyllus. Fem. *Ater, alæ limpidæ.*

Ater, nitens, lœvis, glaber: caput posticum scitissime squameum: oculi nigro-picei: antennæ nigrae, clavatae, corporis dimidio paullo breviores; articuli 3^o. ad 6^{um}. minimi angusti, 7^o. ad 10^{um}. magni lati: mesothoracis parapsides scuto in unum confusæ: scutellum, metathorax abdominisque segmentum 1^{um}. pilis albis utrinque dense hirta: abdomen longi-ovatum, subcompressum, maxime convexum, thorace duplo longius, apice acuminatum; segmentum 1^{um}. brevissimum; 2^{um}. maximum; 3^{um}. et sequentia brevia: pedes nigri; genua et tarsi nigro-picea; protarsi pallidiores: alæ albo-limpidae; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{5}{4}$; alar. lin. 1.)

Found in Ireland, by Mr. Haliday.

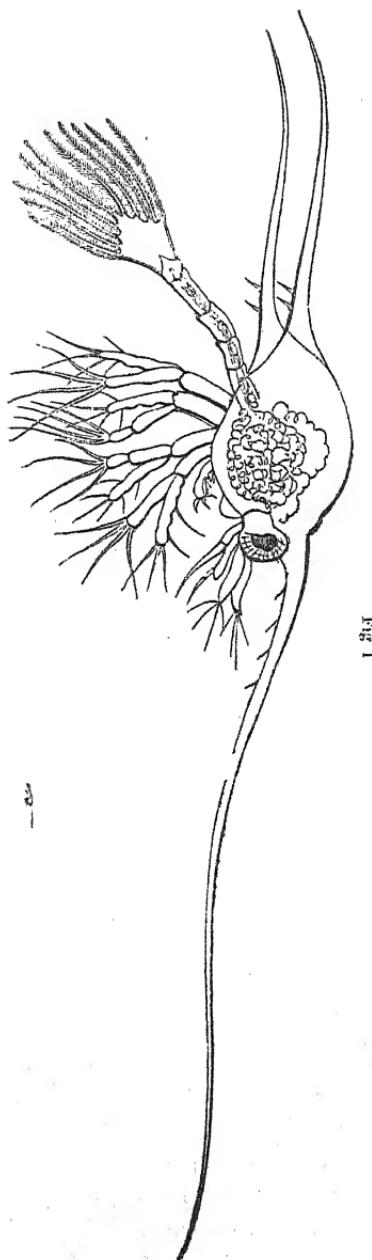
ART. XXIV.—*Memoir on the Metamorphosis in Porcellana and Portunus.* By J. V. THOMPSON, F. L. S., Deputy Inspector-General of Hospitals.

METAMORPHOSIS IN PORCELLANA.

PERCEIVING in the May Number of the Magazine of Natural History, that doubts are still entertained by naturalists, not only of the universality of metamorphosis in the *Crustacea*, but more especially in regard to certain species and genera, I am particularly happy to have it in my power to satisfy the doubts of one gentleman, Mr. Westwood, (*loc. cit.*) with regard to *Porcellana*, which, for particular reasons, he appears to think must form one exception.

It is well known to Crustaceologists that this anomalous genus constitutes the connecting link between the *Brachyura* or crabs, and the *Macroura*; having the extensile tail of the latter, the body of the former, and a kind of intermediate form of all the other parts, and admirably illustrates that axiom of Linnæus—“*Natura non facit saltus.*” When, therefore, the extraordinary facts relating to the metamorphosis of the *Brachyura* and *Macroura* had become known to me, I naturally felt a great desire to ascertain whether the same law prevailed with regard to this intermediate genus, and was so fortunate as to succeed in hatching the spawn of the species of *Porcellana*, which we have in such abundance in the deep water of the harbour of Cove. I had previously discovered, by towing, a very remarkable *Zoë*, totally different in aspect from all those known or described. This was on the 28th of May; and what is very singular, in four days after, viz. the 2d of June, I had the high gratification of seeing the very same *Zoë* emanate from the ripe spawn of *Porcellana*, (fig. 1.) Notwithstanding the minuteness of this curious larva, it is rendered conspicuous against the light, by reason of its very long spines, and may be taken in great abundance during the whole of the month of June.

In this instance we have another proof, in addition to that of *Pinnotheres*, given in the present volume, p. 85, that the *Zoëa*, or larvæ of the *Crustacea*, differ materially in the length and disposition of the spines and form of tail. In the present



case, the frontal and lateral spines are disposed in a horizontal plane, and stretch out directly forwards and backwards, all of them being very greatly attenuated and elongated; the extre-

mity of the tail also differs from that of every other with which I am acquainted, in being spatulate and very deeply fringed.

I beg here to repeat that my proofs of metamorphosis in the *Brachyura* extend to the repeatedly enumerated genera of *Cancer* (Zool. Res.), *Carcinus*, (Memoir just sent to the Royal Society), *Portimus*, (accompanying Memoir,) *Pinnotheres*, (Ent. Mag.), *Porcellana*, (above given,) *Gegarcinus*, *Thelphusa*, *Eriphia*, *Inachus*, and *Pagurus*. In the *Macroura* to *Homarus*, *Palæmon*, *Crangon*, *Astacus*, and *Galathea*.

In regard to the changes which the crabs undergo after their last metamorphosis, and to which Mr. Westwood alludes, I agree with that gentleman that we as yet want facts to guide us. That they still differ from their parents in the form of their clypeus, and in its indentures (at least in *Carcinus*,) is evident by an inspection of the figure which accompanies my Memoir now before the Royal Society; and by a careful perusal of my notes, I find the following additional information, viz.—

“ On the second change, the projection in front between the eyes disappears, and the five denticulations at the sides become more marked, with a very slight widening of the clypeus at this part; the inner pair of antennæ are also more developed and conspicuous. On the third change, the clypeus dilates a little more, the three posterior denticuli appear spinous, the two anterior ones remaining obtuse.”

It is therefore certain that another, or fourth change, is required in this individual before a naturalist could pronounce as to its species by a simple comparison with the parent crab.

METAMORPHOSIS IN PORTUNUS.

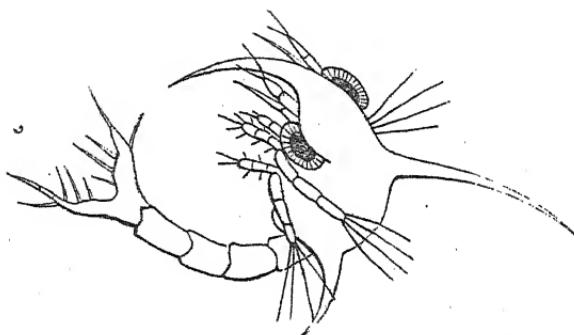
Having, in a Memoir which has been laid before the Royal Society, made known the particulars of the double metamorphosis in the *Brachyura* (crabs) as observed in *Carcinus mænas*, in which these curious changes of form and structure have been traced in as complete and satisfactory a manner as the case probably admits, so as to render quite evident that the young first present themselves to our notice as *Zoëa*, and that they assume a second intermediate form, or that of *Megalopæ*, previous to their taking on that of their parent; I have,

in the present Memoir, to adduce proofs of the same thing in another genus, *viz.* that of *Portunus*.

The genus *Carcinus* appears to connect the genuine crabs (*Arcuati*,) with those of the natatory division to which *Portunus* belongs; which therefore offers, very apropos, the second illustration of this curious fact. The most striking character of this genus, is to have the hinder, or fifth pair of members, formed like paddles, for swimming; and which, when the animal crawls, are bent up over the other feet.

Several species of *Portunus* inhabit the harbour of Cove, as *depurator*, *arcuatus*, *corrugatus*, and *marmoratus*, of which the last is perhaps the most common. One of this species (*P. marmoratus*) being dredged up with spawn ready to hatch, has enabled me to observe and sketch its *Zoë*, (fig. 2,) which

Fig. 2.

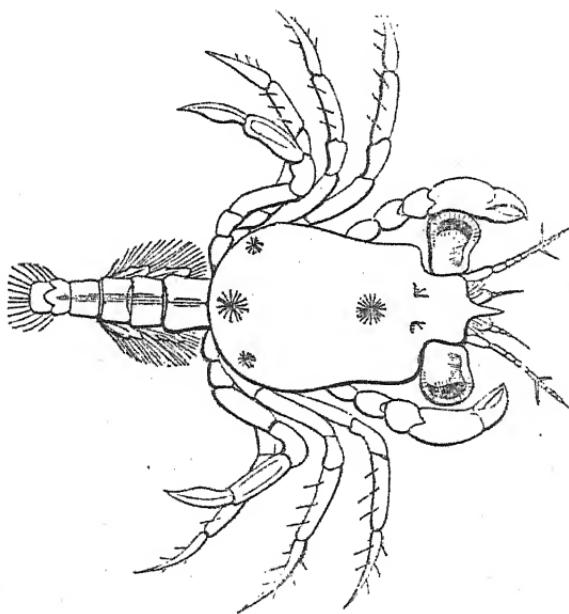


bears a considerable general resemblance to those previously depicted of *Cancer pagurus*, (Zool. Res. Pl. VIII. fig. 1,) and of *Carcinus mænas*. In all these instances, it may be observed, that I had myriads of the fully-developed larvae before me, and not solitary specimens; some struggling to extricate themselves from the envelopes of the ova, others swimming about in full activity. So great indeed is the resemblance of the *Zoëa* of the above-named genera, that did we not know others of a different form, as Leach's *Zoë clavata*, the *Zoë* of *Pinnotheres* (see p. 90), and that of *Porcellana* of the preceding Memoir, we might be apt to suppose a general correspondence in this respect in the larvae of all the *Brachyura*.

As it will hardly ever be possible, by any contrivance, to

insulate and preserve alive these almost imperceptible creatures, until they attain to their full growth as *Zoëa*, we cannot calculate upon ever tracing them during the whole of their progress. However, it is by no means unlikely that the *Zoëa* being captured in their adult state, may be observed in the act of passing into the second form of *Megalopæ*, as very nearly happened in the instance given in Zool. Res. p. 8. We must, until then, be satisfied with the facts detailed in the Memoir on *Carcinus*, where it is clearly shown that *Megalopa* is an intermediate stage between *Zoë* and the perfect crab, and from which we have every reason to presume that the same prevails with regard to the other genera of which we have not an equally clear chain of evidence. These facts first became known on the 8th of June, 1827; and on the 14th of the same month, I obtained the *Megalopa* (fig. 3,) which, from the

Fig. 3.



structure of its hind feet, is evidently that of a *Portunus*. It would be presumptuous, however, to say that it is that of the identical species of which the above-described *Zoë* is the larva, although it is not improbable from *P. marmoratus* being the most common species.

The proof here is also less complete than in *Carcinus*, as this *Megalopa* has not been observed to pass into the crab, which from analogy it is to be inferred that it does ; for, notwithstanding all the care that could be bestowed upon it to keep it alive, it unfortunately died before this eventful period arrived ; indeed, success is hardly to be expected in regard to the marine species of *Crustacea*, as they require such a mass of water, and such frequent changes of it, to preserve them but for a few days. This may be considered one of the many cases in which we are limited in our inquiries into the workings of Omnipotence, and must remain satisfied and thankful for what the Deity has placed within our power, and pleaseth to reveal.

ART. XXV.—*A Tour in the Prairies.* By the Author of
the Sketch-book. London : Murray. 1835.

SWEET poet of America ! it is delightful to us to see thee descending from the airy regions of fiction, and adorning, with thy all but perfect pen, the simple history of fact. We despise not fiction, but we positively reverence truth ; and truth recorded in a poet's language is perhaps the most satisfying of all human productions. Irving and Cooper, the twin poets of America, have infinitely exalted that great and rising country in the estimation of the literary world. Alike in vivid imagination, in power of description, and in their scorn of the trammels of rhyme, these poets have found favour, not only with their countrymen, but with every one who understands the language in which they write. Yet they differ :—Irving is the more quiet, the more facetious, the more comic, the more carefully precise, and excelling almost every writer in the appropriate and harmonious collocation of words and syllables. Cooper is the more bustling, the more exciting, the more tragic, the more splendid. Reader ! we are not deviating from our path ; we are consulting the welfare of Entomology, in shewing thee that Washington Irving is an entomologist. We shall extract the entire chapter, which bears for its title—

A BEE HUNT.

The beautiful forest in which we were encamped abounded in bee-trees: that is to say, trees, in the decayed trunks of which wild bees had established their hives. It is surprising in what countless swarms the bees have overspread the far West, within but a moderate number of years. The Indians consider them the harbinger of the white man, as the buffalo is of the red man; and say, that in proportion as the bee advances, the Indian and the buffalo retire. We are always accustomed to associate the bee-hive with the farmhouse and the flower-garden, and to consider these industrious little animals as connected with the busy haunts of men; and I am told that the wild bee is seldom to be met with at any great distance from the frontier. They have been the heralds of civilization, stedfastly preceding it, as it advanced from the Atlantic borders; and some of the settlers of the West pretend to give the very year when the honey-bee first crossed the Mississippi. The Indians, with surprise, suddenly found the mouldering trees of their forests teeming with ambrosial sweets; and nothing, I am told, can exceed the greedy relish with which they banquet, for the first time, on this unbought luxury of the wilderness.

At present the honey-bee swarms in myriads in the noble groves and forests that skirt and intersect the prairies, and extend along the alluvial bottoms of the rivers. It seems to me as if these beautiful regions answer literally to the description of the land of promise, "a land flowing with milk and honey;" for the rich pasturage of the prairies is calculated to sustain herds of cattle as countless as the sands upon the sea-shore, while the flowers with which they are enamelled render them a very paradise for the nectar-seeking bee.

We had not been long in the camp, when a party set out in quest of a bee-tree; and being curious to witness the sport, I gladly accepted an invitation to accompany them. The party was headed by a veteran bee-hunter, a tall lank fellow, in home-spun garb, that hung loosely about his limbs, and a straw-hat, shaped not unlike a bee-hive; a comrade, equally uncouth in his garb, and without a hat, straddled along at his heels, with a long rifle on his shoulder. To these succeeded half a dozen others, some with axes and some with rifles; for no one stirs far from the camp without fire-arms, so as to be ready either for wild deer or wild Indian.

After proceeding some distance, we came to an open glade, on the skirts of the forest. Here our leader halted, and then advanced quietly to a low bush, on the top of which I perceived a piece of honey-comb. This, I found, was the bait or lure for the wild bees.

Several were humming about it, and diving into its cells. When they had laden themselves with honey, they would rise up in the air, and dart off in one straight line, almost with the velocity of a bullet. The hunters watched attentively the course they took, and then set off in the same direction, stumbling along over twisted roots and fallen trees, with their eyes turned up to the sky. In this way they traced the honey-laden bees to their hive in the hollow trunk of a blasted oak, where, after buzzing about for a moment, they entered a hole about sixty feet from the ground.

Two of the bee-hunters now plied their axes vigorously to the root of the tree to level it with the ground. The mere spectators and amateurs, in the mean time, drew off to a cautious distance, to be out of the way of the falling of the tree and the vengeance of its inmates. The jarring blows of the axe seemed to have no effect in alarming or agitating this most industrious community. They continued to ply at their usual occupations,—some arriving full-freighted into port, others sallying forth on new expeditions, like so many merchantmen in a money-making metropolis, little suspicious of impending bankruptcy and downfall. Even a loud crack, which announced the disruption of the trunk, failed to divert their attention from the intense pursuit of gain. At length down came the tree with a tremendous crash, bursting open from end to end, and displaying all the hoarded treasures of the commonwealth.

One of the hunters immediately ran up with a wisp of lighted hay as a defence against the bees. The latter, however, made no attack, and sought no revenge: they seemed stupefied by the catastrophe, and unsuspicuous of its cause, and remained crawling and buzzing about the ruins without offering us any molestation. Every one of the party now fell to, with spoon and hunting knife, to scoop out the flakes of honey-comb with which the hollow trunk was stored. Some of them were of old date, and a deep brown colour; others were beautifully white, and the honey in their cells was almost limpid. Such of the combs as were entire were placed in camp kettles, to be conveyed to the encampment; those which had been shivered by the fall were divided on the spot. Every stark bee-hunter was to be seen with a rich morsel in his hand, dripping about his fingers, and disappearing as rapidly as a cream tart before the holiday appetite of a school-boy.

Nor was it the bee-hunters alone that profited by the downfall of this industrious community. As if the bees would carry through the similitude of their habits with those of laborious and gainful man, I beheld numbers, from rival hives, arriving on eager wing, to enrich themselves with the ruin of their neighbours. They busied them-

selves as eagerly and cheerily as so many wreckers on an Indiaman that has been driven on shore—plunging into the cells of the broken honey-comb, banqueting greedily on the spoil, and then winging their way full-freighted to their homes. As to the poor proprietors of the ruin, they seemed to have no heart to do any thing, not even to taste the nectar that flowed around them, but crawled backwards and forwards in vacant desolation, as I have seen a poor fellow, with his hands in his breeches pocket, whistling vacantly and despondingly about the ruins of his house that had been burned.

It is difficult to describe the bewilderment of the bees of the bankrupt hive, who had been absent at the time of the catastrophe, and who arrived, from time to time, with full cargoes from abroad. At first they wheeled about the air, in the place where the tree had once reared its head, astonished at finding all a vacuum. At length, as if comprehending their disaster, they settled down, in clusters, on a dry branch of a neighbouring tree, from whence they seemed to contemplate the prostrate ruin, and to buzz forth doleful lamentations over the downfall of their republic. It was a scene on which the melancholy Jacques might have moralized by the hour.

We now abandoned the place, leaving much honey in the hollow tree. "It will be all cleared off by varmint," said one of the rangers.

"What vermin?" asked I.

"O, bears and skunks, and racoons, and 'possums. The bears is the knowingest varmint for finding out a bee-tree in the world. They'll gnaw for days together at the trunk, till they make a hole big enough to get in their paws, and then they'll haul out honey, bees and all."

ART. XXVI.—*Remarks on the Entomology of Epping and its Vicinity.* By EDWARD DOUBLEDAY.

(Continued from page 159.)

"Ablatum mediis opus est incudibus illud
Defuit et scriptis ultima lima meis.
Et veniam pro laude peto: laudatus abunde,
Non fastiditus si tibi, Lector, ero."

DEAR SIR,—IN this, my second epistle to you on this subject, it is my intention merely to offer a few remarks on

sundry species of *Lepidoptera*, which I did not like to pass over and leave, *aliis post commemoranda*. I have, however, little new to offer. I cannot say, *Dulci animos novitate te-nebo*. All I hope for these few lines, is,

“ Ut non ignava legentum
Otia delectant, admoneantque mei.”

There remains also for me to remark on several other classes. These I must for the present postpone; but as you seem to think that your readers would not object to a small slice of Ornithology, I mean to append a list of such birds as have, to my certain knowledge, occurred in this neighbourhood. Perhaps it may be thought by some that there are other places more fitted for such lists. There may be, and perhaps it would not be hard to find one; but,

“ Non procul a stabulis audet secedere, si quæ
Excussa est avidi dentibus agna lupi.
Quicunque Argolica de classe Capharea fugit;
Semper ab Euboïcis vela retorquet aquis.
Et mea cymba semel vasta percussa procella
Illum, quo læsa est, horret adire locum.”

I remain, yours most truly,

EPPING, July 18, 1835.

E. DOUBLEDAY.

Pontia napi. Though this butterfly appears here in profusion, I never met with either *P. sabellicæ*, or *napææ*; which I cannot but think to be mere varieties of this insect. I have often, whilst collecting, been struck with the tendency to vary exhibited by some species in certain localities, whilst in other places we find no such a tendency. I will mention a very common insect as an example of this:—*Harpalus œneus*, in this neighbourhood, scarcely ever varies from its type. At Sudbury and Walton I have found nearly every one of the five species it has been divided into equally common. How can we account for this?

Leucophasia sinapis. For five seasons I had never found this interesting insect, and had concluded that it had altogether disappeared. But in one of the few rambles I have been able to take this year, I captured one specimen. The same day I obtained, *inter alia*, *Lyda inanita*, *Doros Conop-sea*, and *Conopia culiciformis*.

Melitææ Euphrosyne et Selene. I have never yet seen these insects in the autumn. Mr. Stephens speaks of an autumnal brood.

Argynnus Adippe. Rare here.

Vanessa C. album. Many years since this insect used to occur in profusion. I cannot be certain as to the year, but should judge that it was about fifteen or sixteen years ago, for it was when I was a mere child; but I have loved every thing that lived, every thing beautiful, from my childhood, and in my very earliest years was, in some sort, a collector. Some specimens taken there were in existence not very long back, but are now *pulvis et umbra*, or rather only the first. Since those times I have never met with the insect here.

Apatura Iris is very rare here. I have only taken one specimen, a male, in a field adjoining Mr. Marsh's woods. It had settled on the foot-path. I have heard of others being seen here by persons to whose judgment I can trust.

Theclæ W. album et rubi. The former of these is very rare here. Of the latter, one specimen only has occurred within my knowledge.

Polyommatus Argiolus. Surely this butterfly ought to form a separate genus. Its habits, the texture of its wings, and their form, seem to point out an affinity to some of the *Theclæ*.

Polyommatus Agestis. My friend, Mr. John Ray, (a worthy namesake of our great naturalist) discovered this species in plenty in a field not a mile from the town. I was not previously aware of its occurrence here.

Sphinx convolvuli. I have known of several captures of this noble insect in this parish, but they have all been made by unscientific persons; and, consequently, nearly all totally spoiled by the captors. I have, however, a fine pair captured here.

Deilephila Galii. The only specimen which has occurred here was captured by my brother, very early one morning, in August, 1831, hovering over the flowers of *Argemone grandiflora*. *D. porcellus* and *elpenor* are far from common, but come nearly every year to the honey-suckles in our garden. The *Sesiæ* and *Ægeriæ*, mentioned in my list, are all rare here, except *E. tipuliformis*, which unfortunately is but too common.

Cossus ligniperda is very rare here.

Closteria reclusa. Some years ago I reared several from larva found on birch. I have not seen it of late.

Stauropus fagi. Only one specimen taken here.

Lophopteryx Carmelita. A wing only, picked up by my brother, as mentioned in Stephens, H. Vol. II. p. 197.

Trichiura crataegi. Mr. Stephens takes no notice of the extraordinary variation in colour in different larvæ of this insect. I know of no insect where the variation is so striking.

Demas coryli. This insect is, I believe, generally rare. Here it was most decidedly so until last autumn, when myself, and a companion, beat out thirty larvæ in two days, from the underwood in Mr. Cure's woods.

Leucoma salicis. Very rare here.

Porthesia Chrysorrhea. This is in general very rare here; but this year the larva has occurred in tolerable abundance.

Porthesia auriflua. I have observed that this insect, as well as the preceding species, is to be much more frequently met with in confined gardens in towns, than in more open situations. *L. salicis* also seems rather partial to the neighbourhood of large towns. *P. auriflua* is here excessively rare.

Diaphora mendica. This insect seems to be diurnal. I have only taken it on the wing in the day-time.

Triphæna orbona. The most common of the *Noctuidæ* in this neighbourhood. *T. fimbria* and *T. interjecta* are both scarce here. The latter appears to be common in the neighbourhood of Coggeshall, the *Bœotia* of Essex.

Cerigo texta. I cannot but think that Mr. Stephens has fallen into a very great error, in placing this genus next to *Triphæna*. Its crested thorax, the position of its wings when at rest, and its general colouring, mark its close affinity to *Nænia*, near which genus Mr. Curtis has placed it.

Lytaea umbrosa. Common in some seasons on the flowers of the common sunflower.

Rusina ferruginea. I have never taken this insect myself here, but have seen a specimen, which was captured near us two years since.

Agrotis hortorum, &c. I have a number of specimens captured in this neighbourhood, which I am utterly unable to refer to any described species with certainty. Although varying infinitely, I believe that they are all *one* species, but that

they belong to *many nominal* species. Hence the difficulty I find in identifying them.

Grammesia trilinea. In profusion in some seasons. *G. bilinea* is much rarer.

Hadena lithoriza. The larva of this moth feeds on our honey-suckles; it is very elongate, rather tapering towards the head and tail, of a greyish ash colour, with deeper marking, and occasionally (when young) a black lateral line. It appears in June. In the beginning of July it spins on the surface of the ground a pretty firm cocoon, strengthened externally with small fragments of wood, or grains of sand. The pupa is of a lightish brown, rather elongate, tapering very gradually towards the tail. The posterior margins of the abdominal segments appear, at first sight, to be furnished behind with a row of small hooks, but a nearer inspection with a lens shows that this apparent row of hooks is in reality a flat denticulated process of the posterior margin, corresponding to certain crenulations of the margin of the next segment. The larva, in the day time, remains on the branches of the honey-suckles, or on the stumps of the trees which they grow round, consequently is not easy to find.

Mamestra furva. Generally rare here; but in the summer of 1832 was excessively common, frequenting the flowers of the raspberry. *M. oleracea*, which I omitted in my list, has once or twice occurred here.

Eremobia ochroleuca. I have never met with this insect here myself, but have seen a specimen, which was captured at Bobbingworth, about three miles from this parish.

Erastria fuscula. This differs from the rest of the genus in not being diurnal.

Hibernia capreolaria. I think that Mr. Stephens is in error as to the female of this insect; but I am not quite satisfied on this point. What I believe to be the female, agrees with his description of that of *A. leucophæaria*.

Geometræ illunaria et Juliaria. That these are but one species I have no doubt. I have repeatedly raised both from the larva, and have had specimens, which might with equal propriety be referred to either, being exactly intermediate between the spring and summer broods. I had once a female, a decided *illunaria*, which laid her eggs in the box in which I had her. The larvæ soon hatched, and from these

came forth specimens, some of which did not appear till October, but none remained until the spring. They were in fact *Juliaria*, though some were rather larger than that commonly is. The spring brood varies much in size, but is generally larger; yet I have raised specimens from larvæ found in the autumn, little bigger than *Juliaria*.

Boarmia tetragonaria. This, and the two following species, are about equally plentiful here. Perhaps this is the most common. I have taken eight or ten specimens of it in one evening, and seen more. It may mostly be found sitting on the pollard hornbeans, near the head, never low down, like *B. abietaria* and *crepuscularia*. Sometimes we find it on the oak and birch, but this is very seldom. It appears to prefer damp and shady parts of the forest.

Boarmia strigularia. I have this year bred this insect from larvæ found in June. I had not found it here before.

Boarmia punctularia used to be abundant here, but of late I have not found it.

Lampropteryx badiata and *Anticlea derivata* are both very common here.

Melanippe hastata appears to be purely diurnal.

Cheimatobia rupicapraria is found here in profusion. I have captured forty in an hour.

Drepana hamula has this year been unusually common.

I may here mention, that this season some insects, which I have not seen here for some years, have re-appeared. Amongst others, *Rhynchites populi* and *Attelabus cuculionoides*, but not in their usual numbers. *Luperus rufipes* has literally swarmed in our woods by myriads. One stroke of the stick would at once bring a score into a net.

From the few walks I have this year been able to take, I should conceive that this has not been a bad season for insects in general, though not particularly favourable to *Lepidoptera*.

And now let me turn to a subject which has not hitherto employed my pen. Perhaps this is one reason why I feel desirous to try my hand at it.

“ Juvat integros accedere fonteis
Atque haurire: Juvatque novos decerpere flores.”

I have first to state, that I owe all my knowledge of Orni-

thology, or nearly all, to my brother. With his beautiful collection of British birds always before my eye, continually hearing his remarks on them and their habits, I have gained knowledge without labour, without study.

Perhaps I may lay claim to some few observations, which I might be able to make on this subject, but these are few; for though I have observed many things, those have been few which I had not previously learnt from him.

I have, in the following list, adhered exactly to Mr. Selby's arrangement, because I conceive his work to be by far the best on our British birds. With this and Temminck's Manual, the British Ornithologist need never, or very rarely, be at a loss upon any point. And what lover of nature is there that would not be an Ornithologist? How much pleasure, and how pure, can be reaped in a few hours' walk through the fields or woods, from observing the habits of their feathered inhabitants! How pleasing, on a calm summer evening, to watch the Nightjurn skimming over the open heath, or circling some solitary oak, in search of its insect prey! How sweet to wander before sun-rise, through the woods, when the whole choir of summer birds welcome with their songs the approach of day!

There are moments when even the most fortunate feel desponding; and,

“ Lone—as the corse within the shroud,
Lone—as a solitary cloud,
A single cloud on a summer day,
While all the rest of heaven is clear,
A frown upon the atmosphere,
That hath no business to appear
When skies are bright and earth is gay.”

But truly to be pitied would that man be who did not reap some joy from the animated and happy scene around him.

But men will not gather pleasure where it grows most luxuriantly; they prefer the unwholesome vegetation of a stagnant marsh to the bountiful produce of a rich field.

“ O! miseras hominum menteis! O pectora cœca!”

How few persons would believe that the following list of our birds can excite any feelings of interest in the mind of a rational person, or could be made subservient to any useful purpose!

Catalogue of Birds which have occurred in the neighbourhood of Epping.

Accipiter fringillarius,	Sparrow Hawk	Carduelis elegans,	Goldfinch
Falco subbuteo,	Hobby	Linaria cannabina,	Common Linnet
tinunculus,	Kestrel	montana,	Mountain Linnet, or Twite
asalon	Merlin	minor,	Lesser Redpole Linnet
Buteo vulgaris,	Common Buzzard	Coccothraustes vulgaris,	Grosbeak, or Hawfinch
Milvus vulgaris,	Kite	chloris,	Green Grosbeak, or Greenfinch
Otus vulgaris,	Long-eared Owl	Loxia curvirostra,	Common Crossbill
brachyotos,	Short-eared Owl	Pyrhula vulgaris,	Bullfinch
Strix flammea,	Barn Owl	Sturnus vulgaris,	Starling
Ulula stridula,	Tawney Owl	Corvus corax,	Raven
Hirundo rustica,	Chimney Swallow	corone,	Carrion Crow
urbica,	Martin	cornix,	Hooded Crow
riparia,	Sand Martin	frugilegus,	Rook
Cypselus mirarius,	Common Swift	monedula,	Jackdaw
Muscicapa grisola,	Spotted Fly-eater	Pica melanoleuca,	Magpie
Lanius collurio,	Red-backed Shrike	Garrulus glandarius,	Common Jay
Merula viscivora,	Missel Thrush	Picus viridis,	Green Woodpecker
pilaris,	Fieldfare	major,	Great Spotted Woodpecker
musica,	Song Thrush	minor,	Lesser Spotted Woodpecker
Iliaca,	Redwing	Yunx torquilla,	Wryneck
vulgaris,	Blackbird	Sitta Europaea,	Nuthatch
torquata,	King Ouzel	Certhia familiaris,	Common Creeper
Saxicola Enhantie,	Wheat-Ear	Troglodytes Europaeus,	Common Wren
rubetra,	Whin-Chat	Upupa Erops,	Hoopoe
rubicola,	Stone-Chat	Cuculus canorus,	Cuckoo
Erythaca rubecula,	Redbreast	Columba palumbus,	Ring Dove
Phoenicura ruficilla,	Redstart	Enas,	Stock Dove
Salicaria Locustella,	Grasshopper Warbler	turtur,	Turtle Dove
Phragmitis,	Sedge Warbler	Phasianus colchicus,	Common Pheasant
Arundinacea,	Reed Wren	Perdix cinerea,	Common Partridge
Philomela Luscinia,	Nightingale	rubra,	Red Partridge
Curruca atricapilla,	Blackcap	coturnix,	Quail
hortensis	Greater Pettychaps	Ardea cinerea,	Common Heron
cinerrea	White-throat	Botaurus stellaris,	Common Bittern
garrula	Lesser Whitethroat	Totanus ochropus,	Green Sandpiper
Sylvia hippolais?	Lesser Pettychaps, or	Hypoleucus,	Common Sandpiper
sibilatrix,	Chiff-Chaff	Scolopax rusticola,	Woodcock
trochilus	Wood Wren	gallinago,	Common Snipe
Regulus auricapillus,	Willow Wren	gallinula,	Jack Snipe
Parus major,	Gold-crested Regulus, or Golden-crowned Wren	Rallus aquaticus,	Common Rail, or Water Rail
caeruleus,	Great Titmouse	Crex pratinensis,	Corn Crake
palustris	Blue Titmouse	Gallinula chloropus,	Common Moorhen, or Gallinule
ater,	Marsh Titmouse	Vanellus Cristatus,	Crested, or Green Lapwing, or Pewit
caudatus,	Coal Titmouse	Charadrius pluvialis,	Golden Plover
Accentor nodularis,	Long-tailed Titmouse	Gadicenus crepitans,	Common Thick-knee, or Norfolk Plover
Motacilla alba,	Hedge Sparrow	Cygnus ferus,	Wild, or Whistling Swan
boarula,	Pied Wagtail	Anas Boschas,	Wild Duck
flava,	Grey Wagtail	Querquedula crecca,	Teal
Anthus pratensis,	Yellow Wagtail	Podiceps minor,	Little Grebe, or Dab-chick
arboreus,	Meadow Pipit	Sterna Hirundo,	Common Tern
Alauda arvensis,	Tree Pipit	Larus ridibundus,	Black-headed Gull
arborea,	Sky Lark	canus,	Common Gull
Emberiza miliaria,	Tree Lark, or Wood Lark	rissa	Kittiwake
citrinella,	Common Bunting	Puffinus Angelorum,	Shearwater
schoeniculus.	Yellow Bunting, or Yellowhammer		
Passer domesticus,	Reed Bunting		
Fringilla coelebs,	House Sparrow		
montifringilla,	Chaffinch		
	Mountain Finch, or Brambling		
Carduelis spinus,	Siskin		

Besides the above, I may mention that the great ash-coloured Shrike (*Lanius excubitor*), the Cormorant (*Phalacrocorax carbo*), the Scaup Duck (*Fuligula marila*), the

Grey-lag Goose (*Anser palustris*), have been killed at Harlow, and the Whimbrel (*Numenius Phœopus*) at Sewardstone; the former place being about six miles north of us; the latter, about the same distance to the south.

The five last birds in my list in no wise belong to us, and must have been driven inland by stress of weather. The Tern was killed flying over some large old gravel pits, which were full of water; the Shearwater was picked up dead in a field near the town; the three species of Gulls were all met with, in a very exhausted state, after long stormy weather.

Of the species of Hawks contained in my list, two only are at all common here; namely, the Sparrow-hawk and Kestrel. The Hobby is very rare. The Merlin is merely a visitant in the autumnal months, and that very rarely. I only know of one having been killed here, and that a young female. The Buzzard and Kite are now extinct, (thanks to the game-keepers); but the former I have seen within four or five years. Previous to that time I have very often watched them soaring high in the air, over the Park-hall and Hill-hall woods. They feed chiefly on small quadrupeds, toads, frogs, and insects; but a toad is their most favourite dish.

Hirundo riparia does not breed here.

Merula torquata. Seen only at the time of their equatorial, or polar migrations.

Salicaria arundinacea. One specimen shot at a large pond near the town. I am not aware of its being found near any of the rivers around us. It is common at Sudbury.

Motacilla Boarula. A winter visitant. I saw this bird in June, in the Vale of Llangollen, and near Snowdon.

Fringilla Montifringilla. An occasional visitant at the time of their spring and autumn migrations. The bill of this bird becomes nearly black in summer. This change is not uncommon amongst this tribe of birds.

The Grosbeak has a pale whitish bill in winter; in summer it is of a deepish lead colour; so also has the Chaffinch.

Carduelis spinus. An occasional visitant.

Coccothraustes vulgaris. This interesting bird is very common here, though rarely to be seen, save by a practised Ornithologist, from its shyness. In the winter it visits our gardens, to feed on the fallen stones of plums, bullaces, or laurel, which it dexterously cracks with its powerful bill.

Sometimes it may be found in small companies, of ten or fifteen, feeding on the fallen seeds of the hornbeans. It generally builds in a tall whitethorn, or holly; the nest is sometimes as loose as a Ring-dove's, but at others it bestows rather more pains upon it. It lays from five to six eggs. When the young are fledged, they visit the gardens near the forest in search of green peas. I have been told that last year, nearly, if not quite thirty, were killed in the garden of Colonel Conyers, of Copt-hall, whose park, I believe, to be a favourite breeding place of this bird.

Corvus cornix. Very rarely seen here.

Picus minor. Not often met with in this neighbourhood.

Upupa Epopis. One specimen of the Hoopoe was killed a few years since, about a mile from the town.

Botaurus stellaris has occurred here but once.

Ædicnemus crepitans. In calm moon-light evenings in spring, we frequently hear the call of this interesting bird, as it passes over at a considerable height. I never knew of more than one specimen being killed in this parish.

Totanus ochropus occurs here in May, July (the first week), August, and September.

Had I time, I could with much pleasure have said more on this subject; but this being wanting, I must now conclude. And as it may be long, very long, before I shall again obtrude myself on the notice of your readers, allow me to wish them all good night; and to add thereto one other wish, in the words of an unfortunate poet:—

“*Detur inoffensæ metam tibi tangere vitæ,
Qui legis hoc nobis non inimicus opus.
Atque utinam pro te possint mea vota valere
Quæ pro me duros non tetigere Deos!*”

ART. XXVII.—*List of Entomological Works.*

1. *On the History, Habits, and Instincts of Animals*; by the Rev. W. Kirby, M. A.; being No. VII. of the Bridgewater Treatises. London: Pickering. 1835.

2. *The Magazine of Natural History*; conducted by J. C. Loudon. London: Longman. 1835. Monthly Numbers, XLVII. to LII.

NEWMAN, in a paper read before the Linnaean Society of London, and lately published in this Magazine,^a has shown most clearly, that the metamorphosis of insects is nothing more than ecdysis, or a sloughing of the external covering. It is perfectly true, that ecdysis occasionally takes place with little or no alteration of external form; it is true also, that in metamorphosis a complete change of external forms frequently takes place; but it is equally true, that we are acquainted with every degree in the graduated scale between the maximum and minimum degree of change. Under these circumstances, we are compelled to acknowledge that metamorphosis is ecdysis, and that ecdysis is metamorphosis; for the mind refuses to apply one reasoning to any given portion of a series, and seek another reasoning for a different portion of the same series.

There is no subject which has caused so great a sensation among Naturalists as the metamorphosis of *Decapods*. For this highly important discovery we are indebted to Mr. Thompson. He has shown, beyond the possibility of dispute, that *Decapods* commence their existence under a form widely differing from that in which they arrive at maturity. Bosc, in his "Histoire Naturelle des Crustacés," has named, described, and figured, a minute oceanic insect, under the name of *Zoëa pelagica*.^b Latreille altered the name to *Zoë*, in his "Genera Crustaceorum et Insectorum";^c and Leach, in the "Edinburgh Encyclopædia,"^d and "Encyclopædia Britannica,"^e adopts the latter name, and describes the insect. This same *Zoë* is now proved to be the state of a crab, or some *Decapod*, immediately on its exclusion from the ovum. Another genus, named *Megalopa* by Leach, and not hitherto supposed to be related to *Zoë*, proves also to be a young crab advanced another stage towards perfection; but it appears that more than one ecdysis is necessary to convert a *Zoë* into a *Megalopa*, and probably several more to convert a *Megalopa* into a crab. The very recent date of these important discoveries clearly shows how much we are still in the dark as to the value of our genera of *Crustacea*, and how completely we stand in need of a complete revision of our classification in this branch of Entomology. Sincerely do we hope that Mr. Thompson

^a See page 12 of the present volume. ^b Tom. II. p. 135, pl. 15, f. 3, 4.

^c Tom. I. p. 21. ^d VII. 889. ^e Suppl. I. 423.

will undertake it; aided by the labours of Desmarest, Audouin, Milne, Edwards, and other continental writers—and with his own great knowledge, derived from real observation, there is no man living so competent to the task.

Long after the *Decapods* have relinquished their preparatory form, and assumed that in which they reach perfection, they have yet to undergo a repeated and complete ecdysis, the mode of which appeared to vary considerably in different orders. In a common lobster, which Mr. Newman has shown us, destroyed while in the very act of casting its shell, the cephalothorax, or principal shell, is parted longitudinally down the back, and one half appears ready to fall each way. In the spider-crab Mr. Hill describes the moult thus:—

A few days since a spider-crab was sent alive to me, taken in the act of changing its coat. The operation was singular. The upper and lower shell being parted, the legs were withdrawn from their old cases, and served as a lever to detach the under shell from the upper. Some exertion of the legs was necessary to raise the upper shell: this had been accomplished, but it was not entirely detached from the body when brought to me. The body was quite soft, and the new skin of about the consistence of parchment.—*Magazine of Natural History*, Vol. VIII. p. 468.

We will now proceed to a statement of the Rev. Mr. Bree's, a writer, whose veracity is beyond doubt; and we find that, touching the question of metamorphosis considered as the decided change of shape, we have in the common fresh-water cray-fish, (*Astacus fluviatilis*) an exception to the general rule. The first passage quoted refers to the ecdysis of cray-fish, after having attained a considerable magnitude.

On these occasions, I well recollect, we seldom failed to find first the *exuviae*, or cast shells, of the cray-fish; secondly, certain cray-fish, which had so lately undergone the operation, that their new shells had not yet acquired their usual firm consistency, but were soft and flabby, and as pliable to the touch as a piece of thin parchment. These soft-shelled individuals we used to consider as out of season, and we generally refrained from taking them. Thirdly, I may state, that when the cray-fish came to be dressed, and served up at table, it was no unusual occurrence to meet with some which had so nearly approached the period of their change, that on breaking the outward shell, a second and newly-formed shell was perceptible beneath it. Fourthly, and to crown all, I have more than once seen

cray-fish in the act of casting their shells; *i. e.* with the old shell not completely thrown off, but still adhering to the animal. Of the precise mode and manner in which they disengage themselves from their old shells, I regret I can give no particular account. I can state, however, that the shell is cast entire, not broken into pieces, nor split above, so that the cray-fish, as we might expect, must crawl out from the fore-part beneath. The operation of casting the shell, I should conclude, is not confined to any one fixed period of the year, but is regulated by other causes. My visits to the brook in question were made in the months of July and August; at which season, as already stated, some specimens were to be found which had recently undergone the change, others were about to undergo it; but by far the greater number exhibited no signs either of recent or future casting of the shell.—*Magazine of Natural History*, Vol. VIII. p. 468.

Mr. Thompson, it should seem, maintains the existence of transformations *throughout* the *Crustacea*, similar, I suppose, to those of the larvae of insects. Now here, again, I cannot speak to the fact as regards crabs and lobsters; and I know that there are anomalies in nature. But *the young of the fresh-water cray-fish most unquestionably are hatched, and come into the world of the same shape as the adult ones.* In the above-mentioned brook, I have caught cray-fish with the ova apparently just hatched, and the minute young not having yet, as it were, left the nest, but still adhering to the under part of the parent.—*Ibid.* p. 469.

The same number of the Magazine of Natural History contains a notice, with figures, of a new *Phyllosoma*, by Mr. Lukis; also a notice, with figures, of *Squilla Desmarestii*, by the same gentleman; the figures are admirably cut in wood. Some observations on the living *Squilla* are so interesting that we cannot forbear quoting them.

The *Squilla* I kept alive in a basin of sea-water for two days, during which time I had a fair opportunity of observing its activity and peculiar habits. It sported about, and after a first approach, exhibited a boldness rather unexpected. When first alarmed, it sprang backward, with great velocity; after which, it placed itself in a menacing attitude, which would rather have excited a fear of exposing the hand to it. The prominent appearance of the eyes, their brilliancy and attentive watching, and the feeling power of the long antennæ, evinced quick apprehension and instinct. I brought a silver tea-spoon near them, which was struck out of my hand with a suddenness and force comparable to an electric shock. This blow

was effected by the large arms, which were closed, and projected in an instant with the quickness of lightning. An apparent anxiety to keep the head and claws in front, made me suspect that the animal lodges its hinder part in holes and recesses, from which it can strike at its prey or other passing objects. The attitude represented in the figure (nearly linear), was maintained during my observations; and I did not see any inclination to close the tail in a more compacted form.—*Magazine of Natural History*, Vol. VIII. p. 464.

Recurring to the work whose title stands at the head of this article, it seems to us that we shall scarcely do our duty without offering an observation on its general tenor. Far be it from us to set up our opinion in opposition to that of Mr. Kirby; far be it from us to tell one so much our superior in these matters that he is wrong: yet will we venture, in humility and perfect kindness towards Mr. Kirby, whom we respect and love, to make a few comments on the work before us. Mr. Kirby starts with the motto, “C'est la Bible à la main que nous devons entrer dans la temple auguste de la nature, pour bien comprendre la voix du Créateur;” and keeping this maxim in view, facts in nature are bent into unison with the Bible, or passages in the Bible receive new and strange interpretations to make them agree with nature. Now, though we admit to the full the exquisite beauty and sublimity of various metaphorical and illustrative allusions to natural objects which occur throughout the Holy Scriptures, yet we consider the sacred volume designed for higher objects than the elucidation of scientific questions, or the description of perishable objects. We cannot view it as a book of Natural History. Nevertheless, wide as is the difference between Mr. Kirby's belief and our own on this point, and wider it cannot be, we must still add, that we feel confident that Mr. Kirby's views are not promulgated without a firm and conscientious belief, on his part, that they are perfectly sound, and calculated to advance the design of the work he has undertaken,—that of showing “the power, wisdom, and goodness of God, as manifested in the creation.” As works of science, we have been sorely disappointed with the Bridgewater Treatises. Considered as a work of science, we offer no opinion of the individual treatise now under consideration; yet we have no hesitation in recommending it to the general reader.

The aged cannot rise from its perusal without pleasure, nor the young without having received instruction.

On the history of *Crustacea*, Mr. Kirby has been somewhat diffuse; and although a work of this sort is necessarily a compilation, and contains in the way of fact little or nothing of novelty, yet, in the present instance, the mass of information collected from various authentic sources is highly valuable. In extracting the following passage respecting a species of land-crab (*Gecarcinus carnifex*), we have been more attracted by its interest than its novelty.

They descend the mountains, which are their usual abode, in such numbers, that the roads and woods are covered with them. They feel an impulse so to steer their course, that they may travel by the easiest descent, and arrive most readily at the sea, the great object at which they aim. They resemble a vast army marching in battle array, without breaking their ranks, following always a right line; they scale the houses and surmount every other obstacle that lies in their way. They sometimes even get into the houses, making a noise like that of rats; and when they enter the gardens, they commit great devastations, destroying all their produce with their claws. They are said to halt twice every day, and to travel chiefly in the night. Arrived at the sea-shore, they are there reported to bathe three or four different times. When retiring to the neighbouring plains or woods, they repose for some time, and then the females return to the water and commit their eggs to the waves. This business despatched, they endeavour to regain, in the same order, the country they had left, and by the same route, but only the most vigorous can reach the mountains. The greater part are so lean and weak that they are forced to stop to recruit their strength in the first country they reach. When arrived again at their habitations, they have a new labour to undergo, for now is the time of their moult. They hide themselves in their subterranean retreats for this purpose, so that not a single one can be seen: they even stop up the mouth of their burrows.—*Kirby, on the History, &c. Vol. I. p. 124.*

With regard to the actual process of moulting, our author gives the account long since published by Réaumur; and it is rather remarkable that that illustrious entomologist's observations were made on the very same animal as those of Mr. Bree, recorded above. Our desire to bring together all the authentic information within our reach on this interesting

subject, induces us to transcribe the passage even at the risk of being charged with the repetition of an oft-told tale. One word on the previous quotation: the fact that it is essential for the *Gecarcinus carnifex* to pass its first days in the water, clearly proves the young of that species have a different economy from the adults. This fact establishes a metamorphosis almost as decisively as the detection of the young under a totally different shape.

In the spring, in boxes pierced with holes, which he placed both in the river and in an apartment, Réaumur put the fresh-water cray-fish (*Astacus fluviatilis*). He observed, that when one of these was about to cast its crust, it rubbed its feet one against the other, and gave itself violent contortions. After these preparatory movements it swelled out its body more than usual, and the first segment of its abdomen appeared more than commonly distant from the thorax. The membrane that united them now burst, and its new body appeared. After resting for some time, it recommenced agitating its legs and other parts, swelling to the utmost the parts covered by the thorax, which was thus elevated and separated from the base of the legs; the membrane which united it to the underside of the body burst asunder, and it only remained attached towards the mouth. In a few minutes from this time the animal was entirely stripped, except the legs. First, the margin of the thorax was seen to separate from the first pair of legs: at that instant drawing back its head, after reiterated efforts, it disengaged its eyes from their cases, and all the other organs of the anterior part of the head. It next uncased one of its fore-legs, or all or part of the legs on one side, which operation is so difficult, that young ones sometimes die under it. When the legs are disengaged, the animal casts off the thorax, extends the tail briskly, and pushes off its covering and that of its parts. After this last action, which requires the utmost exertion of its remaining vigour, it sinks into a state of great weakness. Its limbs are so soft that they bend like a piece of wet paper; but if the back is felt its flesh appears unexpectedly firm; a circumstance arising, perhaps, from the convulsive state of the muscles. When the thorax is once disengaged, and the animal has begun to extricate its legs, nothing can stop its progress. Réaumur often took them out of the water with the intention of preserving them half uncased; but they finished, in spite of him, their moult in his hands. Upon examining the exuviae of these animals, we find no external part wanting: every hair is a case which covers another hair. The lower articulations of the legs

are divided longitudinally, at a suture which separates during the operation, but which is not visible in the living animal.—*Kirby, on the History, &c.* Vol. II. p. 52.

The time requisite for hardening the newly-acquired crust, according to its previous state, is from one to three days. Those animals which are ready to moult, have always two strong substances, called crabs' eyes, placed in the stomach, which, from the experiments of Réaumur and others, appear destined to furnish the matter, or a portion of it, of which the shell is formed; for if the animal is opened the day after its moult, when the shell is only half-hardened, these substances are found only half diminished; and if opened later, they are proportionably smaller. Thus has Creative Wisdom provided means for the prompt consolidation of the crust of these creatures, so that it is soon rescued from the dangers to which, in its naked state, it is exposed.—*Ibid.* Vol. II. p. 55.

With this doctrine we scarcely agree; it has always appeared to us, that the stomach is the least likely part of the animal to contain the matter for the future shell; and we confess we are unable to devise a process by which the mass of calcareous matter contained in these substances shall be conveyed through the flesh to the external skin. The reproduction of lost members in *Crustacea* is a most interesting subject, and one which claimed the close attention of Réaumur. Mr. Kirby, quoting that high authority on this subject, gives us the following account:—

When a leg is mutilated in the summer, if examined a day or two after the experiment, the first circumstance observable is a kind of covering membrane, of a reddish hue; in five or six days more this membrane becomes convex; next it is protruded into a conical shape, and keeps gradually lengthening as the germinating leg is developed; at last the membrane is ruptured, and the leg appears at first soft, but in a few days it becomes as hard as the old one. It now wants only size and length, and these it acquires in time, and at every moult it augments in a more rapid proportion than the legs which have their proper size. The antennæ, maxillæ, &c. are reproduced in the same manner; but if the tail is mutilated it is never reproduced, and the animal dies.—*Ibid.* Vol. II. p. 57.

It seems to us unaccountable, that *Crustaceology*, one of the most interesting branches of Entomology, should have so few students in comparison with the other branches of the

science. We have, perhaps, ourselves been somewhat to blame in not allowing it a more prominent place in our pages than we have hitherto done. We now announce our intention of repairing this error; and, aided by the valuable contributions of Mr. Thompson, we hope that no future number will appear without, at least, one article on *Crustacea*. The singular and varied economy of these creatures, their gigantic size, and the value of many species as articles of food and commerce, surely might weigh with the Entomologist, even though he held it of no importance that without them his cabinet must be incomplete. Of the Hermit, or Soldier-crabs, we have already spoken in our opening article. Mr. Kirby's work contains a still more complete and interesting account of them; but after the quotation from Mr. Bennett's "Wanderings," we must not transcribe it. Our author mentions a huge lobster, which ascends the cocoa and palm trees by night, devouring their fruit, of which it is so fond, that in confinement it will subsist on it for months, without suffering from want of water. One kind of land-crab is distinguished by the extraordinary disproportion of its claws; one of them, sometimes the left, sometimes the right, being enormously large, while the other is very small, and often concealed, so that the animal appears single-handed. These crabs "have the habit of holding up the great claw, as if beckoning to some one." Another species of land-crab runs so fast that it is difficult to overtake it on foot. A third species requires a fleet horse to run it down. Bosc relates, that he found these in Carolina, where he experienced great difficulty in riding them down and shooting them with a pistol. There is a story, delightfully told, in a little book lately published, which, being founded on fact, gives some idea of the size, strength, and activity of a land-crab. It happened that, in one of the insurrections of the blacks in the West Indies, a corporal of marines was murdered, the head being separated completely from the body. At night, the body and head were buried by his comrades in a grave, which it may be supposed was not very deep. The next day a kind of skeleton-looking object was seen sporting about with the corporal's head under his arm. The sailors who witnessed this, as a matter of course, supposed the animal to be the corporal's ghost; but an officer of marines, accustomed to the country, knew better. He loaded a couple

of rifles, and going out with his servant in quest of the so-called ghost, soon found him. The head was still held under the arm of the animal, who, at sight of the enemy, made off with all speed. However, the first rifle-shot, well directed, caused him to drop the head; and a second, after a severe chase among the brushwood, laid him kicking on his back. It need scarcely be added that the ghost was a large land-crab.

3. *British Entomology; by John Curtis. Nos. CXXXV. to CXXXVIII., March to June, 1835.*

4. *Illustrations of British Entomology; by J. F. Stephens. Nos. LXXII. to LXXX.*

5. *A Manual of Entomology, from the German of Dr. Hermann Burmeister; by W. E. Shuckard, M. E. S. With Original Notes and additional Plates. Nos. II. to VIII.*
This work will henceforth appear in double Numbers.

6. *The Transactions of the Linnæan Society of London. Vol. XVII. Part 2, 1835. On Diopsis, a genus of Dipterous Insects, with Descriptions of twenty-one Species; by J. O. Westwood, Esq., F. L. S.*

7. *A Treatise on the Geography and Classification of Animals; by William Swainson, Esq.*

8. *Etudes Entomologiques, ou Description d'Insectes nouveaux, et Observations sur leur Synonymie; par M. de Laporte, Compte de Castlneau. Livraison 2. Paris, 1835.*

9. *Iconographie du Règne Animal de M. le Baron Cuvier; par M. F. E. Guérin. Paris. Livraisons 38 et 39. Insectes, pl. 40, 56, 57, 58, 67, 68, 69, 70, 71, 73, 75.*

10. *Iconographie, &c. des Coléoptères d'Europe; par M. le Comte Dejean, et M. le Docteur J. A. Boisduval. Tome IV. Livraison 8. Paris.*

11. *Magasin de Zoologie; par. F. E. Guérin. Paris, 1835.*

12. *Annales de la Société Entomologique de France.* Tome III. Trimestre 4. Paris, 1834; et Tome IV. Trimestre 1. 1835.
13. *Genera des Insectes, &c.; par M. M. E. Guérin et A. Percheron.* Livraison 1. Paris, 1835.
14. *Faune Entomologique des Environs de Paris; par MM. Boisduval et Lacordaire.* Tome I. Paris, 1835.
15. *Tableaux Synoptiques des Lépidoptères d'Europe;* par MM. Villiers et Guenée. Paris, 1835.
16. *Coléoptères du Mexique; par A. Chevrolat.* Fasciculo 3. Paris, 1834.
17. *Histoire Naturelle des Lépidoptères Rhopalocères ou Papillons diurnes des départemens des Haut et Bas-Rhin, de la Moselle, de la Meurthe et des Vosges, publiée par L. P. Cantener.* Livraison 3. Paris, 1834.
18. *Monographie des Cétoines, et Genres voisins, &c.; par M. H. Gory, et M. A. Percheron.* Livraison 7. Paris, 1834.
19. *Histoire Naturelle des Lépidoptères, ou Papillons de France; par Godart, continuée par M. Duponchel.* Tome IX. Nocturnes; Tome VI., Livraison 3 et 4. Supplement, &c. Tome I. Livraison 17. Paris, 1834.
20. *Iconographie des Chenilles, &c.* Tome I. Livraisons 11 et 12.
21. *Icones Historiques des Lépidoptères nouveaux ou peu connus; par le Docteur Boisduval.* Livraisons 27, 28, 29, 30.
22. *Collection Iconographique et Historique des Chenilles, &c.; par MM. Boisduval, Rambur et Graslin.* Livraisons 25—30.
23. *Histoire Naturelle des Lépidoptères d'Europe,* par N. Lucas; ouvrage orné de près de 400 figures peintes d'après nature; par A. Noel. Paris, 1834.

24. *Faune Entomologique de l'Oceanie, comprenant les Coléoptères, les Hémiptères, les Hyménoptères et les Dip-tères. Par le Docteur Boisduval.* Paris, 1835.

25. *Histoire Naturelle et Iconographie des Insectes Coléoptères, par F. L. de Laporte, Comte de Castleneau, et H. Gory. Livraison 1.* Paris, 1835. — This Number treats of the *Chrysochroidæ*, a family of *Buprestites*, comprising the following genera, — *Sternocera*, *Julodis*, *Ac-mæodera*, and *Chrysochroa*. It is illustrated by four plates beautifully coloured.

26. *Handbuch der Entomologie von Hermann Burmeister. Zweiter Band. Mit 2 Rupfertafeln und erklärendem Text in Quart.* Berlin, 1835.

27. *Outlines of Comparative Anatomy; by Robert E. Grant, M.D. Part II. containing the Muscular and Nervous Systems. Illustrated with thirty wood-cuts.* London, 1835.

28. *Suites à Buffon, &c. Histoire des Insectes; Diptères par M. Macquart. Tome II. Accompagné de Planches.* Paris, 1835.

29. *Suites à Buffon, &c. Histoire Naturelle des Crustacés, par M. Milne Edwards. Tome I.* Paris, 1834.

30. *Mémoire sur l'Organisation des Cirripèdes et sur leur Rapports Naturels avec les Animaux Articulés; avec 2 planches; par G. J. Martin-Saint-Ange.* Paris, 1835.

31. *Monographie Die Arachniden. Von D. Carl. Wilh. Hahn.* Nürnberg, 1835.

So rapid is the progress of Entomology, and so abundant the works on the science, that were we to give an analysis, however cursory, of each, we should not have a single page left us for original matter. We trust this will be a sufficient apology to the authors of twenty-nine publications, whose titles only we have given in the above list.

ART. XXVIII.—*Varieties.*

9.—*Locality of certain forms in Natural History.*—“It is very remarkable that, in the production of certain forms of the animal and vegetable kingdom, nature should be so closely tied down to localities—a circumstance which we are as yet unable to account for. The forests of Brazil abound with hideous amphibia and innumerable insect tribes. It is impossible to touch the branch of a tree, or the leaf of a plant, without disturbing beetles or other insects; but in Oahoo, as in the other islands of the South Seas, there is the greatest paucity of insects. In vain we examine the under-surface of the leaves,—in vain we shake the trees,—no insects fall down; we, however, meet with snails of very pretty forms, and often of brilliant colours; sometimes striped very regularly, and a good deal like our *Helix nemoralis*; sometimes entirely grass-green, which colour they however lose when dead, and which can have been communicated to the shell only by the animals having subsisted on green leaves. Instead of insects, nature has, in the Sandwich Islands, placed millions of land-snails upon the trees, while she has observed a medium in the Indian isles. There, as for instance at Manilla, she has assigned to vegetation partly land-snails and partly insects—both frequently of enormous size and the most brilliant colours. There is a great variety in the size, colour, and form of the land-snails of the Sandwich Islands. Mr. Von Chamisso has already described an *Auricula Owaihiensis*, and an *Auricula sinistrorsa*; and Mr. Green, an *Achatina Stewartii*, and an *Achatina Oahnensis*, besides several new kinds brought back by the French naturalists and ourselves. It is a curious circumstance, that the greater number of these snails are sinister; while among us, and in all other parts, this deviation is very rare;—nay, there are some kinds of the species *Achatina*, which seem to occur only sinister in the island of Oahoo.”—*Meyer's Voyage Round the World.*

10. *Hermaphrodite specimen of Polyommatus Alexis.*—A specimen of this pretty little butterfly has been taken at Deptford, with the wings on one side bright blue, on the other brown; in one instance possessing all the characters of the male, in the other, all those of the female. Such an individual has been figured in the last number of the *Annales de la Société Entomologique de France.* E. N. D.

THE
ENTOMOLOGICAL MAGAZINE.

JANUARY, 1836.

ART. XXIX.—*Wanderings and Ponderings of an Insect-Hunter.*

CHAPTER I.

[The Insect-Hunter walketh over Blackheath, across the fields, to Eltham; thence, by Sidcup and Foothill Cray, to Birch Wood; he descanteth on writers and dogs; he entereth the wood, and recordeth its productions; he concludeth the chapter.]

IT happened, one fine morning, towards the end of June, that I rose before the sun, fitted myself out for an entomological expedition, and walked quietly over Blackheath, behind Morden College, and across the fields towards Eltham. The tower of Severn-droog, that *ultima Thule* of Cockaigne, seemed to float, like an anchored ship at sea, on the dense white mass of mist that entirely hid from my sight Shooter's Hill, on which the tower stands. The skylarks hovering in the blue ether above me, were hymning the praises of their Maker. The corn-fields, heavy with dew, were not undulated by a single breeze. Near as I was to his multitudinous dwelling, surrounded by the evidence of his toil, there was no sound of man;—I was perfectly, deliciously alone. The presence, aye even the distant voice of man would have oppressed my very breathing, would have destroyed the charmed existence which I then possessed. I continued on my way, and each successive mile produced its variety; its men, its birds, its insects. Each mile was pleasing after its manner, but those traversed in the earliest hour were the most delightful.

After passing Sidcup, the country opens beautifully before the traveller; a thousand fields and long tracts of wood appear before him. Hops, raspberries, plums, and cherries, are scattered profusely over the landscape, making the surface of the country appear like a continuous garden. About three miles distant to the left, a little cluster of black fir-trees mark that ever-welcome resting-place, Birch Wood Corner. Descending the hill, we reach Foots' Cray, remarkable for the advertisements at its various public-houses, that ale is there sold by the *yard* instead of by the *pint*. About a mile beyond Foots' Cray, on the grass, by the road side, I have frequently met with *Chrysomela Goettingensis*: the locality is to the left of the road, and about one hundred yards on the London side of the turnpike-gate. At this spot I have taken *Zabrus gibbus*, crawling across the road. About three quarters of a mile further, the trees again appear, not distant now, but showing their black tops in the very centre of the road, above which they appear to dance, rising and falling with every step the traveller takes. The extreme top of these trees always puts me in mind of a hound with tail erect, and nose puzzling on the ground in the attempt to recover a lost scent. The road is now cut through the hill, leaving a sandy bank on either side, the favourite haunt of bees, sand-wasps, and tiger-beetles. A few minutes more, and I am seated in the little bay-windowed room at the Bull Inn, the supposed scene of those strange imaginary dialogues which have been published, from time to time, in the Entomological Magazine, under the title of *Colloquia Entomologica*. At the period I first visited this inn, these dialogues had not seen the light, and therefore, could give no interest to the spot; but now the case is different: I never enter the room without a vivid impression that within its walls those dialogues are supposed to have occurred. That I am the Entomophilus, and my friend Doubleday, as he acknowledges, is the Erro, cannot be matter of doubt to ourselves or those who know us; that the ideas, the fears, the anticipations, the aspirations, the reflections, are the genuine property of those in whose mouths they are placed is equally incontrovertible; but it is doubtful, very doubtful, whether any one has the right thus to exhibit to the public the workings of minds which, in the freedom of social intercourse, he may have seen thus unveiled.

Independently of the Colloquia, the Bull has its interests. It is there the Entomological Club hold their symposia : happy, happy days, of which the anticipation or the remembrance last throughout the year. To me the very dogs are acquaintance ; and however ludicrous it may appear to some of my readers, I acknowledge that I love dogs. The admission will be fatal to my reputation, will lose me many readers : the "Insect-Hunter" loves dogs ! he cannot help it : it may be a failing, but it is irradicable, inherent. There is something so intelligent, so affectionate, about dogs, that I cannot help loving them. Rockwood is no more ! his deep mellow voice will never again elicit the echo of those lovely woods : he lived till life became a burthen. I was present when sentence of death was passed on him. I could not remonstrate : the deed was a deed of kindness. I wandered to the wood to be out of the way ; my net, instead of being flung jauntily into the hollow of my arm, as an American backwoodsman carries his rifle, was left inverted by the fire-place. I sought for no insects, but whistled on my devious way. I always whistle when I am melancholy ; and a singing in my ear told me I had lost a friend.

I have an entomological friend who has a very different feeling towards dogs—a feeling I cannot understand. He never travels without a dog-stick ; and as soon as he spies a dog at a distance he puts himself in an attitude of hostility. His muscles become rigid, his eyes become fixed, and he advances towards the unfortunate animal with all the zeal of Don Quixote charging a windmill or a flock of sheep. He is possessed of cynophobia ; he fears an attack, and attacks first to gain the advantage. The poor animal, unsuspecting of harm, at first appears lost in astonishment, then bristles his mane, and grows uncomfortable ; and, at last, in sheer self-defence, is driven to make the attack, which is so much the object of dread. But enough of dogs for the present.

Birch Wood, as a locality for insects, has no equal in the vicinity of London : it matters not which class the collector is in quest of, he here may suit himself. The character of the wood is more various than that of any other with which I am acquainted. We enter it, from the Bull Inn, through a field of elder-trees ; an elder orchard, on the blossoms of which specimens of *Trichius nobilis* have occasionally been found, and the pretty little *Malachius fasciatus* occurs in abundance.

After this field, or orchard, we pass through a belt of under-wood, principally Spanish chestnut, to a large plantation of Scotch and larch firs, on the trunks of which, if carefully examined, may be found a variety of moths. The various species of *Alcis* and *Boarmia* are most abundant, each in its appointed season. *Achatia piniperda* I have also frequently found half hidden in the cracks of the bark. It is necessary to thin these plantations as the trees increase in size: the whole plantation is surveyed, a portion of the trees marked, and, with the axe, cut down close to the ground. On the stumps, immediately after the fall of the tree, will be found specimens of *Hylobius abietis*, and *Hylurgus piniperda*, and *ater*. When the stumps have rotted, and become touch-wood, they will be found to contain vast numbers of *Rhagium bifasciatum*, in the various stages of larva, pupa, and imago, and if a young oak has shared in the periodical condemnation, its decaying stump will be found to contain *Rhagium vulgare*. Both these *Rhagia* may be beaten, in abundance, from the blossom of the whitethorn and holly. Beneath the fir-trees, the grass, which is long, abounds in minute *Diptera* and parasitic *Hymenoptera*, and the *fungi* are most productive of *Coleoptera*. The *Agarici* produce *Oxyporus rufus*, and other rare *Staphylinites*; the *Boleti* produce *Agathidia* and *Staphylinites*, and the *Lycoperdines*, which are abundant, almost invariably contain *Lycoperdina bovisetæ*.

Leaving this plantation, we pass through a thicket containing a number of juniper-trees and seedling firs: on these junipers I first discovered the beautiful *Acanthosoma picta*, one of the most splendid British insects of the order *Cimicites*; it abounds here in March and the beginning of April, and is again met with in August and September. A species of *Perilampus* inhabits the same trees, and is readily beaten from them into a folding-net, the only way in which the *Acanthosoma* has been taken. Beyond this thicket the wood is composed principally of oak-trees, with an abundant undergrowth of hazel, birch, dogwood, whitethorn, &c.

A portion of this undergrowth is cut down close to the ground, every year, and converted into hoops, and faggots, and hurdles, by which means the wood presents a diversity of growth; a plot of a few acres being quite bare, while on one side of it another plot has a year's growth, and on the other

side ten years' growth. When a portion of the undergrowth has been cut, the ground is spontaneously covered with the humble ground-ivy and the common bugle, (*Ajuga reptans.*) Round the blossoms of the bugle the elegant *Sesiæ* hover to extract the sweets. Both the species *fuciformis* and *bombiformis* may be taken daily, as long as the flower continues in blossom. The time is May, and synchronous with the *Sesiæ* are the elegant butterflies *Euphrosyne* and *Selene*, the lively *Lucina*, and the feeble, frail, and slender *Sinapis*. The wood is, throughout, intersected with roads, the thick foliage of the sides of which is most prolific, and should be carefully beaten into the large clap-net: the produce will be a variety of *Noctuites*, (particularly the rich *N. fimbria.*) *Tortricites*, and beetles of all kinds; and the grassy edges of the roads, if swept with the round hand-net, yield multitudes of minute *Hymenoptera* and *Diptera*. In these roads the umbellate flowers are the resort of *Zaræa fasciata*, *Leptura 4-fasciata*, and other rarities.

To the south-east of the wood, and closely joining it, is a field of heath, which produces the following *Orchideæ* in abundance:—*Ophrys apifera*, *Listera ovata*, *Orchis bifolia*, *morio*, *mascula*, and *maculata*. In this field, the males of *Saturnia carpini* and *Endromis versicolor*, are occasionally taken on the wing: they fly in the afternoon, and invariably against the wind.

To the south-west of the wood is another field, like the former, uncultivated, and, throughout the summer, a perfect flower-garden. Here abound the various species of *Hieracium*, and other composite flowers, on which sun-loving insects delight to settle. Here also grow, in great profusion, *Lotus corniculatus*, *Thymus serpyllus*, *Acinos vulgaris*, *Echium vulgare*, *Polygala vulgaris*, with its various shades of red, purple, blue, and white; *Orchis mascula*, *maculata*, and *morio*, and the tall white *bifolia*, are most conspicuous; *scabiosa succisa* and *arvensis*; *Centaurea nigra* and *scabiosa*. The entomological produce is abundant and various: on the *Centaurea* feed a number of *Tephritisites*, the most abundant of which are—*Alciphron*, *cornuta*, *pugionata*, and *sonchi*. I have taken a hundred specimens of *cornuta* from the flowers of *Centaurea scabiosa* in a single day; and a month earlier, before the flowers were expanded, I have found *Alciphron*

almost equally abundant on the same plant. On the bright blue *Echium* I have taken *Ceratina cærulea*, one of our rarest British bees. On several dwarf umbellate flowers *Tiphia femorata* abounds. Several species of *Cryptocephalus* are found on the flowers ; and the bright sun-loving *Pyraustæ* hover over the thyme in great numbers ; that little beauty *octo-maculata* is not uncommon ; and the gay red and green *Zygænæ* fly from blossom to blossom of the *Centaurea scabiosa*. But I cannot give a list of the entomological treasures of this lovely spot ; the task were too tedious : my object is to show the character of the places which I visit, not to record their every production. Entering the wood, at the farther corner of the garden-field, we come to another excellent insect locality, a pond in winter, a bog in summer. In winter this pond is most productive in *Colymbetes*. I well recollect, one Easter Monday, when I had wandered here with three companions, the extraordinary luck that we had in fishing that little pond. It strikes me that some reader may object to my applying the term winter to Easter Monday ; that reader will find an answer by going into the woods on that day ; they will reply, it is winter still. On the day in question, we took *Colymbetes bimaculatus, fennestratus, fuliginosus, guttiger, ater*, and *oblongus*, by hundreds, and about a dozen *Grapii*, out of this one little pond. In July I have watched for hours over and about the bed of this pond the beautiful vagaries, the elegant air-wanderings of the purple emperor, now alone, now with a companion soaring upwards, in circles and semicircles, till the eye refused its office, and sank to the earth for rest. And here, in August and September, the brilliantly red dragon-fly, *Sympetrum rufo-stigma*, chases his dingy bride over the withering rushes.

The roads in this wood afford the most excellent mothing ; *Stauropus fagi*, *Perideæa serrata*, *Notodonta carmelita*, being among the rarities taken here. I wandered backwards and forwards for an hour in search of these, but without success, and I did not reach the inn till it was too late to distinguish the night moths as they flew, and the night-jar had ceased his tiresome monotonous burr. I was soon installed in my arm-chair with a variety of substantials before me, the discussion of which occupied but short time. Then I lighted my cigar, and meditated on the past, the present, and the future. I felt

myself to be standing on the very summit of a hill ; before me lay the future, an interminable diversified region, misty and indistinct. I turned me, and looked back on the past—it was a bright, a sunny, and a goodly landscape. I gazed thereon with pleasure. Reader, dost thou ask why the past was to me so much more brilliant than the future ? I will tell thee : with me the present is blessed and sanctified by content. He that pursues his path in feverish excitement, in discontented drudgery, feasting his imagination with dazzling views of future glory, will never look back on such a life as mine. He may attain the summit of his hopes, but he will attain it merely to find that it is utterly unworthy the sacrifices he has made in its pursuit. He will look back on the past as on a scene of desolation, and the tinsel glitter of the future he will find is tarnished.

As this, my first chapter, is drawing to a close, it may be well to explain who and what I am. The anonymous is used by an author for the same purpose as a veil by a woman : it enables him to be a little more pert than he would otherwise think quite decorous ; and, moreover, it excites a degree of curiosity which insures observation. The anonymous is seldom employed for concealment. The author of Pelham would be mortified at not being known as the author of Pelham. The author of the Letters of Delta would be cut to the quick if he heard a whisper that another laid claim to his inimitable vapouring about South America. The anonymous therefore I must preserve, at the same time taking especial care to make myself known lest I should hereafter have to complain that

Hos ego versiculos feci, tulit alter honores.

Who and what I am I will therefore tell you—by-and-bye.

CHAPTER II.

[The Insect-Hunter meeteth with a companion ; they discourse ; they journey together to Darenth ; the Insect-Hunter discloseth a portion of his history.]

The next morning, whilst breakfasting, I received a visit from a brother of the net, a worthy man, with whom I have

since kept up something like an intimacy. He is still living, and the hand of time, during the years I have known him, has pressed on him but lightly. I will describe him as I saw him first: there is so vivid an impression made by the first view, that a figure seldom afterwards appears to present itself in so decided relief, seldom affords so striking a contrast with the existences around it. Mr. —— was of a spare make and moderate height; he appeared to have outlived the age of man by some half dozen or half score years, during which period no great change in his garments or equipments appeared to have taken place; his hat was placed on his head so jauntily aside that it almost hid his left eye; his coat, waistcoat, and small-clothes had outlived the fashion which formerly, as imperiously as now, dictated their proportions. His net was in his right hand, and such a net! the variety of its hues, and the multiplicity of its rents, which had been carefully mended, bore ample testimony to its long servitude. A large flat pincushion, the repairs of which, in a diversity of materials, gave it the appearance of mosaic, hung round his neck by a piece of twine. His right hand held a hazel wand, the upper half of which was barked, and the extreme end shivered into a brush by beating the bushes. His entrance was magnificent; the polished grace with which he lifted his hat with one hand, at the same time giving the wand an inimitable and almost unintentional flourish with the other; the profundity of his bend, his bland and gentlemanly expression of countenance, would have done honour to the politest era of the past century. His overture being accomplished, he addressed me thus:—"Your servant, Sir; took the liberty Sir ——; have you taken the lobster this year?" The first and second sections of this address I attempted to answer with all the good manners I could muster: the third section utterly posed me. It occurred to me, if there was a lobster in the house, what a pretty addition it would have made to my breakfast; but I kept this idea to myself. I produced my collecting boxes, which contained mostly *Hymenoptera* and *Diptera*, many of them very minute. When the old gentleman saw them, a smile of conscious, yet beneficent superiority irradiated his face. He ejaculated—" Only clear-wings!" and closing the boxes, returned them to me, with an expression of countenance that told most obviously, although courteously, what an utter

greenhorn he considered me. Leaving the room for a few minutes, he returned with two large folding-boxes filled with *Geometrites*, *Noctuites*, and a row of *Colias Electra*; or, as he termed them, *slender-bodies*, *full-bodies*, and *clouded yellows*. The whole were for sale, at prices proportionate to their rarity, on which subject I felt myself wofully ignorant. I made a few trifling purchases, and we became excellent friends.

This brother of the net, I found, had been staying some weeks in the neighbourhood, making Birch Wood Corner his head-quarters, and occasionally spending a day or two in some other favourite woods in the neighbourhood. On the morning in question he was going to Darenth Wood, or rather Darn, that being the name by which he designated it, and by which it is usually known. I immediately volunteered myself as a companion, and my offer was accepted. Long preparation was not needed by either of us, and within half an hour we were marching side by side. The lane, from Birch to Darenth, turns out of the Maidstone road to the left, immediately beyond the premises of the Bull. About a mile from Birch, my companion showed me the spot where he had taken five specimens of the beautiful *Issoria Lathonia*, or Queen of Spain. He found them settling on flowers in the hedges, by the way-side. As we proceeded, I was asked a variety of questions, intended to elicit my name and rank in the entomological world. My companion was well acquainted with the leading entomologists, and spoke of them as intimates, relating a variety of transactions which he had had with each. We descended into a most romantic chalk-pit, to the right of the lane, in which is a cave of considerable extent, with a roof finely arched. In the pit was a fine old plant of *Atropa belladonna*, then magnificently in blossom. In this place I quite exhausted the polite patience of my companion, by my long examination of a colony of *Anthophora retusa*. This bee is said to build a kind of mud hive, or nest, against the trunk of a tree, a bank, or wall; but in the present instance, and many others which I have since examined, there was no external building whatever, the bees entering the face of the bank by perfectly round smooth holes. Another kind of bee, *Melecta*, was continually arriving with the *Anthophoræ*, and entering their holes; it appeared to be on a perfectly friendly footing with the

rest of the community. It is the economy of this bee to lay its eggs in the nest of the *Anthophora*; the grubs, on hatching, devour the food provided by the *Anthophoræ* for their own young, which, thus deprived of their support, shrivel up and die.

At length, emerging from the pit, we continued our course along the lane till it opens on Dartford Heath. To the left is Mr. Menett's park, the palings of which are the favourite resort and resting-place of moths: my companion pointed out to me a spot on these palings where he had taken, during the previous September, a fine specimen of *Catocala Fraxini*, the Clifton nonpareil. Leaving this park directly behind us, we stretched across the heath, bearing rather to the right, and after a sunny, dusty, and, as regards captures, unprofitable walk, we arrived, at four o'clock, at the Fox and Hounds, at Darenth. Kelham, the landlord of the Fox and Hounds, is quite a character: his tall gaunt figure, his toothless mouth, ever on the smile, his broad straw hat, his scarcely intelligible dialect, contribute to render him a man whom, once known, is not easily forgotten. The evening of our arrival at Kelham's was spent in mothting—I cannot now say with what success, but I perfectly recollect that my box, on my return, contained many species which, at that time, were quite unknown to me.

I was not, at the period of which I am writing, a perfect novice in entomology; “the boy is father of the man,” and from my earliest years, I had been a hunter of butterflies; but the taste, during the years of adolescence, had been well nigh dormant, until I quite accidentally met with Mr. Samouelle, in the year 1825. I had never before conversed with any one who possessed so much knowledge of the subject. Mr. Samouelle, at the very time I became acquainted with him, was engaged in the formation of a social Entomological Society, and I was at once admitted a member. The first meeting of this Society, which I attended, I never shall forget. The slender knowledge I possessed of insects was derived from Berkenhout's “*Synopsis*,” and Marsham's volume on *Coleoptera*; but, in the course of conversation, not a single name was mentioned that I had ever read in either of these authors. I was a perfect dummy. I longed for the utterance of one sentence about “*Emperors*” or “*Admirals*;” then I could have

chimed in; but no, every word was entirely scientific. I resolved, before another month, to furnish myself with a little more knowledge; I procured Samouelle's "Compendium," and went to work. Entomology soon opened up to me a new and delightful world; and, as I lay on my sleepless bed at Darenth, I felt a greater love than ever for the science, on account of the agreeable society into which it had introduced me.

ART. XXX.—*British Species of the Dipterous Tribe Sphæroceridæ.* By A. H. HALIDAY, M.A.

THIS group was first distinguished from the other *Muscidæ*, under the generic name of *Borborus*, by Meigen, in the year 1803. Latreille, in 1809, called the same *Sphærocera*; and, at a much later period, Fallén included it along with *Cælopa*, in his genus *Copromyzæ*. With the last-named author, it forms a part of the family *Heteromyzides*, while Latreille has ranked it in his vast and undigested section *Scatomyzides*. In Robineau Desvoidy's Essay on this family, we have it subdivided into nine genera, forming the most considerable portion of *Putrellideæ*, the 2d section of his 7th tribe *Napæellæ*. The remainder of that section is composed of the *Ephydræ* of Fallén; a conjunction that does not seem very natural. His generic and specific characters are unusually vague in this instance; and, as he has made no reference to the work of Fallén, it is not easy to identify the species intended by him. An admirable arrangement of the genus is given in the last volume of Meigen's European *Diptera*: thirty species are described, and distributed in six sections, characterized mostly by the wings. Macquart (in the system of *Diptera*, forming part of the Suites à Buffon) has elevated the group to a higher rank, and adopted those sections for his genera, admitting also *Olina*, from R. Desvoidy, and adding an eighth, *Crumomyia*, to receive *Borborus glacialis* of Meigen. Neither of these last two appears to have occurred in Britain, and the type of the genus *Ceroptera* has been found only in Portugal. I extract Macquart's synoptic table of the genera entire, and propose to adhere to his arrangement and nomenclature.

A very small proportion of the species described by continental authors have yet been found in Britain. The diligent researches of Mr. F. Walker have added several well-marked species to our Fauna, and he most kindly transmitted the entire of his rich collection for my use. Even with these accessions the list is scanty, but I have convinced myself that many of their characters are subject to vary so much as to render great caution expedient in separating species. I have therefore omitted several, which may prove distinct, from not having a satisfactory series of examples. There is so much uniformity of colour among these insects, that we must generally depend on less obvious distinctions. I have found the disposition of the nerves in the wings sufficiently constant to be of service in this respect.

Fam.—MUSCIDÆ.

Tribe.—SPHÆROCIDÆ.

Calyptera fere nulla. Nervus longitudinalis 1^{us.} simplex, vix $\frac{1}{3}$ costæ pertingens : tarsorum posticorum articulus 1^{us.} dilatatus, 2^{do.} brevior : antennarum articulus 3^{us.} sphæroides, arista dorsali elongata gracillima.

SYNONYMA.—*Borborus*, Meigen.—*Sphærocera*, Latr.—

Copromyza spp. Fallén.—*Nerea*, Bacchis, Mycetia, *Sphærocera*, Lordatia, Coprina, Fimetia, Scatophora, Olina, Rob. Desvoidy.—*Spærroceridae*, Macquart.

Front broad, subquadrate, a little inclined : orbits, frontals, and stemmatic triangle usually distinguished : ocelli three : eyes round : antennæ rather distant, short, slightly deflected : 1st joint very small : 2d as long as 3d ; 3d transversely spheroidal, obliquely compressed : arista dorsal, long and slender, with only two joints apparent : face broad, impressed, membranaceous : epistoma prominent, bearing vibrissæ at the corners : clypeus exerted transverse : cavity of the mouth very large, rounded : labium thick, fleshy; below with a broad bellying sheath of horny consistence, and hairy : labella round, obliquely striate : labrum short : tongue obsolete : maxillæ with a small linear and hairy lobe disengaged from the lip : palpi linear, bristly : thorax rather depressed : abdomen depressed, oblong, often showing only six segments in the male, as the penultimate is withdrawn ; and but five in the female, the remainder being very small, tubular, and internal ; sometimes falling short even of that number, from

some being indistinct : legs long, formed for running or leaping : onychii distinct, feathery : 1st joint of the hind feet shorter than the 2d, dilated : wings in repose lying flat on the back : the 1st main nerve short, not divided : axillary lobe rather large : calyptre nearly at their smallest, the interior auricle disappearing : the larvæ inhabit putrid substances.

Synopsis of Indigenous Genera.

Arista	with the basal joint scarcely distinct	naked	SPHÆROCERA.
		pubescent; wings	BORDORUS.
		abortive .	APTERINA.
	jointed at the base; 2d or principal cross-nerve of the wing	perpendicular	LIMOSINA.
		oblique	HETEROPTERA.

GEN. I.—SPHÆROCERA.

Arista glabra quasi exarticulata: frons, scutellum setis expertes: areola analis completa: nervus transversus ordinarius ab alæ margine remotus.

Borborus, A. b. . Meig. VI. 200.

Sphærocera . . . Macq. S. à B. II. 564. II.

Lordatia, Coprina . Rob. D. 808. VIII. 810. IX.

Front much produced, flat, without long bristles : face very short, concave : antennæ reposed in deep lateral cavities : arista naked, the 1st joint very minute : thorax with the numeral callosities very protuberant, the suture before the wings deep, the sides of the metathorax angular : abdomen broad, very flat, margined, the 1st segment almost concealed : middle shanks without lateral bristles, hind pair ending in a curved spur : first joint of the hind feet very much dilated : anal cell of the wing, and the small one before it complete : principal cross nerve distant by its own length from the margin : 5th main nerve continued beyond it ; 4th approaching the 3d, at the tip of the wing, by a gentle curve.

A. Thoracis lineæ scutellumque hispidulæ.

Sp. 1. Sph. subsultans. *Abdominis segmento 2^{do}. prægrandi; pedibus posticis elongatis incrassatis, mas, femoribus clavatis.*

Musca subsultans . . . Fabr. Sp. Ins. II. 444. No. 1.

Rhagio subsultans . . . Schra. F. B. III. 2402.

Calobata subsultans . . . Fabr. Syst. Antl. 264. No. 17.

- Copromyza subsultans . . *Fall. Heterom.* 7. No. 3.
 Borborus subsultans . . *Meig.* VI. 200. No. 2.
 Sphærocera subsultans . . *Macq. S. à B.* II. 565. No. 1.
 Sphærocera curvipes . . *Latr. Gen.* IV. 359.
 Lordatia merdarum, sterco-
 raria, cadaverina, necro-
 phaga *Rob. D.* 809. Nes. 1, 2, 3, 5.

Rather dull black, with faint lines on the thorax: frontal triangle more glossy: there are a number of minute points disposed in distant lines on the thorax, and scattered over the scutel: abdomen very broad, the 2d segment appearing very large, as the 3d is confounded with it; the rest are small, and gradually narrower: the coxae, and the base of the shanks are rust brown; or the posterior legs are testaceous, with the feet, and generally the knees dusky; the hind legs are very long, both the thighs and shanks thick, and the spur strong; in the male the hind thighs are still more thickened: poisers dirty white: wings yellowish hyaline, often with brown streaks between the nerves: when newly excluded, the insect is of a pale greenish brown, with paler legs, darker abdomen, and hyaline wings; and most species of the tribe at that period are of the same colour. (Length 1½—2½; wings 3—4 lines.)

Every where abundant on dunghills, hotbeds, &c.

Sp. 2. *Sph. monilis.* *Pedibus simplicibus, annulo tarsorum anticorum albo.*

Head and thorax as in No. 1: abdomen as in *Sph. denticulata*: hind legs longer and more slender than in this last, and the 1st joint of the feet less dilated: fore feet rather thick, with the end of the first joint and the entire second white: the hind legs are scarcely thicker in the male than the female. (Length 1½; wings 3 lines.)

Found in the New Forest by F. Walker, Esq.; also near London.

AA. *Thorax et scutellum granulati, hujus margo denticulatus.*

Sp. 3. *Sph. vaporariorum.* *Capite thoraceque nigris; femo-
 ribus posticis parum incrassatis fem. clavatis mas.*

Lordatia coprina, Rob. D. 809. No. 4.

Resembles the following species, but the hind thighs of the male are nearly as large as in No. 1, and a little thickened in the female also:

the 1st joint of the hind feet is less dilated than in No. 4, the wings shorter: abdomen attenuate behind: thorax generally without impressed lines, but is more irregularly and thinly shagreened about the middle than elsewhere. (Length 1; wings 2 lines.)

I find it commonly on deliquescent cucumbers. Mr. F. Walker also takes it near London.

Sp. 4. *Sph. denticulata*. *Capite thoraceque nigris; femoribus posticis maris parum incrassatis*.

Borborus denticulatus . *Meig.* VI. 200. No. 3.

Sphærocera denticulatus. *Macq. S. à B.* II. 565. No. 2.

Coprina bovina . . . *Rob. D.* 810. No. 1.

Dull black: arista blackish: thorax and scutel shagreened and set with minute points, the former with two impressed smooth lines, the margin of the latter with a number of sharp teeth: abdomen, in the female particularly, broader than the thorax; the 2d, 3d, and 4th segments nearly equal, 5th small: coxae and knees brown; or the legs are testaceous, with the feet and the end of the shanks dusky in the fore pair. Hind thighs of female slender, a little thickened in male: poisers whitish: wings hyaline, with brownish nerves; or of a dusky tinge, with the costal nerve blackish. (Length $1\frac{1}{2}$; wings $2\frac{3}{4}$ lines, or less.)

In the same localities with the 1st species, but much less abundant.

Sp. 5. *Sph. scabricula*. *Brunnea, abdomine nigro*.

Head and thorax chestnut-brown, opaque, very thickly shagreened, and set with minute white points, lying flat: head very long: eyes small: arista whitish: teeth of the scutel very sharp, decurved: abdomen black: legs short, set with very minute whitish bristles, light brown, with the knees and feet paler: hind thighs of the male not thickened: feet very short; 1st joint of the hind pair as long as the next three together: wings whitish hyaline, with pale ferruginous nerves; the costal brown: they are shorter than in No. 4, and the rib is finely ciliate. (Length $\frac{3}{4}$; wings $1\frac{1}{2}$ line.)

Found near London, by Mr. Walker.

GEN. II.—BORBORUS.

Arista pubescens, quasi exarticulata. Frons et scutellum setigeræ. Areola analis completa. Nervus transversus ordinarius alæ margini proximus.

Borborus A. c. . *Meig.* VI. 201.

— . . . *Macq. S. à B.* II. 565. III.

Sphærocera, &c. *Rob. D.* 807. VII. &c.

Front less produced than in *Sphærocera*, some long bristles bordering the frontals: face longer: antennæ obliquely advanced: arista pubescent, the basal joint very minute: thorax smooth; scutel short, with a pair of bristles at the end: anal cell of the wing and the small one before it complete: the cross nerves remote, the principal one being close to the margin, and the 5th main nerve scarcely, if at all, continued beyond it: 3d and 4th not approaching.

A. *Tibiæ posticæ calcari instructæ.*

B. *Tibiæ medie extrinsecus setigeræ.*

Sp. 1. B. nitidus. *Niger nitidus, halteribus albidis; alis ferrugineis; mas femoribus posticis basi uncinatis.*

Borborus nitidus, *Meig.* VI. 201. No. 4.

— *Macq. S. à B.* II. 566. No. I.

Nerea nitidus . *Rob. D.* 803. No. 3.

Borborus hamatus, *Ent. Mag.* I. 177.

— *Curt. B. E.* 469.

Shining black: frontals dull black: arista hairy: palpi not dilated: thorax with a brassy tinge: segments of the abdomen nearly equal in length; two filiform appendages beneath in the male: legs hairy: the posterior coxæ, the trochanters, and knees, sometimes rust brown; the middle shanks have a row of long spines down the outside. In the male the thighs are very thick; the fore pair serrate below; the hind pair longer, curved, and armed at the base below with a hook: the small second spur of these shanks is twisted and angular, and catches on the hook: in the female there is only a tubercle in its place: the 1st joint of fore feet slightly unguiculate at the tip; the 2d joint of the hind feet is thickened, and as well as the 1st, covered below with yellow down: in the female the fore thighs only are thickened, and the basal joints of the hind feet are more slender: poisers whitish: the wings are rust yellow; the nerves brown; the cross nerves often darker. (Length 2½; wings, 5 lines.)

Inhabits fungi; not abundant in England and Ireland.^a In France, according to Macquart, may be found throughout

^a Found in Lanarkshire, Scotland.—ED.

the winter. The identity of Meigen's insect, which is described as having a testaceous face, is doubtful. I have deferred to the authority of Macquart in uniting them.

Sp. 2. B. suillorum. *Niger nitidus, halteribus albidis; alis ferrugineis, nervis transversis infuscatis.*

Mycetia tibialis, Rob. D. 806. No. 2.

Very like the last : the bristles on the outside of the middle shanks are much finer ; the legs more slender ; the thighs of male unarmed, and only the fore pair thickened ; the 2d joint of the hind feet slender : the posterior coxae, the trochanters and feet, and the extreme base of the shanks, are rust brown, the fore and hind feet darker : the cross nerves of the wings are constantly suffused with brown. (Length $1\frac{1}{2}$; wings, 3 lines.)

Inhabits fungi in England and Ireland, but is rather uncommon. I cannot determine whether Macquart's 9th species may not be the same, though the great difference of size makes it less likely. In any case the name *punctipennis* will have to be dropped, as it is already used by Wiedemann.

Var. β.—Shanks and feet ferruginous ; end of the fore shanks and base of the fore and hind feet brown.

Mycetia communis, Rob. D. 805. No. 1.

Taken by Mr. F. Walker near London.

Sp. 3. B. niger. *Niger, opacus, villosus, halteribus fuscis; alis hyalinis.*

Borborus niger, Meig. VI. 201. No. 6.

Macq. S. à B. II. 566. No. 3.

Dull black, hairy : a glossy line down the front : arista thickly pubescent : thorax slightly tinged with green : segments of the abdomen nearly equal : knees and feet dusky : fore thighs thick, hairy : first joint of the fore feet unguiculate at the tip in the male ; middle shanks with strong bristles or spines on the outside ; the 2d joint of the hind feet scarcely thickened : poisers dusky : wings obscurely hyaline, with brown nerves. (Length $2\frac{1}{4}$; wings, $4\frac{1}{2}$ lines.)

Not common in Ireland ; generally on mountain heaths. Mr. Walker has taken a specimen in England.

BB. *Tibiæ mediæ absque setis literalibus.*

Sp. 4. B. equinus. *Arista subnuda; abdominis segmento 2^{do.} maximo; tarsis posticis brevibus; mas, metatarso antico inermi.*

Copromyza equina . . . Fallén. Heterom. 6. No. 2.

Borborus equina . . . Meig. VI. 201. No. 5.

— . . . *Macq. S. à B. II. 566. No. 2.*

Sphærocera communis, fuliginea, coprívora? . . . Rob. D. 807. Nos. 1, 2. 808. No. 3.

Arista with very thin and short pubescence: 2d segment of the abdomen much larger than the 3d: legs rather short; first joint of fore feet not unguiculate in the male; the middle tibiæ have a few bristles on the outside, but so short as to be scarcely visible: the hind feet are short and broad; the first 2 joints broader; the 3d nearly quadrate; the 4th transverse: the small cross nerve is placed a little above the middle of the long discoidal cell: varies much in colour: the larger individuals (α) usually have the cheeks, face, and fore margin of the front rufescent: the frontals opaque, black or dusky: the orbits, frontal triangle, and thorax, shining brassy brown; the last with 4 dusky lines: the abdomen in the male is incurved behind, with the terminal joint not much thickened: the last ventral emarginate, with prominent angles: the legs are testaceous; the knees and fore feet, and the first 2 joints in the hind pair, dusky: in the male the fore thighs are black, with testaceous tip: poisers whitish: wings brownish hyaline; the cross nerves sometimes darkened: smaller individuals are sometimes (β) glossy black: a very narrow margin of the front rufescent: frontals opaque: thorax without lines; abdomen of the male more thickened at the end; the ventral segment entire: poisers light brown or pale. In others (γ) the base of the shanks becomes rust brown or testaceous; and again (γ) this colour spreads over the entire hind pair: even the difference of form in the abdomen is not permanent. (Length $1\frac{1}{2}$ to $2\frac{1}{2}$; wings, 3 to 5 lines.)

Every where; the most abundant species of this tribe, swarming about cattle yards.

Sp. 5. B. nigrifemoratus. *Arista subnuda; abdominis segmentis subæqualibus; niger nitidus; fronte pedibusque testaceis, femoribus anticis, in mare omnibus nigris; metatarso antico maris inermi.*

Borborus nigrifemoratus, *Macq. S. à B.* II. 567. No. 5.

Like varieties β γ of the last: male glossy black; the narrow margin of the front testaceous: the 2d and 3d segments of the abdomen equal in length: the shanks and feet brown; the base of the former testaceous; or the posterior shanks with the middle feet entirely of the latter colour; the hind feet longer than in the last: the cross nerves of the wing more remote; the small one not reaching to one-third of the discoidal cell. I have seen no females, and only 2 males of this insect, and am still rather doubtful whether it be the species cited, or really distinct from the last.

In Mr. Walker's collection.

Sp. 6. *B. flavipennis. Niger; facie, coxis anticis et genubus testaceis; halteribus albidis; alis flavescentibus pallido-nervosis.* Fem.

Black: the frontals dull; the triangle glossy: face and palpi testaceous: thorax shining: abdomen dull black: 2d segment not longer: legs hairy: the fore coxae and the extreme base of the shanks rust-yellow: poisers whitish: wings yellowish: nerves scarcely darker; the small cross-nerve placed about the first third of the discoidal cell: resembles the next species, but the fore and hind thighs are thick; the 1st joint of the hind feet almost triangular; the 2d very little longer; and the cross-nerves are much less distant. (Length $1\frac{1}{2}$; wings, $2\frac{5}{8}$ lines.)

Found by Mr. Walker near London.

Sp. 7. *B. longipennis. Niger; pedibus ferrugineis; femoribus et tibiarum apice fuscis; halteribus albidis; alis pallido-nervosis; nervis transversis remotis.*

Black: pubescent, with little gloss: frontals opaque: segments of the abdomen nearly equal: the extremity in the male but little thickened: hairy: the underside and sometimes the incisures pale: legs hairy; in the male pitchy brown, with the fore coxae, and knees and the base of the shanks, rust-brown: in the female, either of the same colour, or rust-yellow, with the fore and hind feet, the end of the shanks and of the posterior thighs, brown: the spur springs before the extremity of the hind shank and is very slender and long: the 2d joint of the hind feet is one-half longer than the 1st, and a little thickened: in the male, the first joint of the fore feet is very distinctly unguiculate; poisers whitish: wings hyaline with pale nerves; the small cross-nerve

usually at the first fifth of the discoidal cell. (Length $1\frac{1}{2}$; wings, 3 lines.)

On the sea coast of Ireland; in various parts of England; not rare.

Sp. 8. B. vitripennis. *Niger*; *halteribus albidis*; *alishyalinis fusco-nervosis*, *nervis transversis remotis*.

Borborus vitripennis, Meig. VI. 206. No. 20.

Resembles the last in most points: is entirely black: the frontals very deep and opaque; black: the triangle and thorax shining: the abdomen of the male is clavate at the end and less hairy: legs entirely black; base of the poisers blackish: wings with the nerves more evident from their dusky colour; the cross nerves scarcely so remote. (Length 1; wings, $2\frac{1}{8}$ lines.)

On sandy coasts of Ireland; shores of Cornwall. Mr. Walker.

Varies with the legs less hairy and much longer, the 2d joint of the hind feet not thickened.

Found by Mr. Walker on the shores of Cornwall.

AA. *Tibiæ posticæ ecalcaratæ*.

Sp. 9. B. ater. *Niger nitidus*, *glaber*, *fronte antice et genubus testaceis*; *halteribus albidis*.

Borborus ater. Meig. VI. 203. No. 11.

B. geniculatus, Macq. S. à B. II. 567. No. 6.

Glossy black, nearly glabrous: fore margin of the front and sides of the face testaceous: frontals almost naked, narrow, dull black: arista very slightly pubescent: scutel flat, semicircular, the terminal bristles minute: segments of the abdomen nearly equal: legs rather short and almost naked; the fore thighs thick and shining: the extreme base of the shanks, in general also the fore coxæ and the base of the middle feet, pale testaceous: the 2d joint of the hind feet not dilated, nor is the 1st of the fore pair unguiculate in the male: poisers whitish: wings hyaline; nerves brown; the middle of the costal blackish; the small cross nerve a little above the middle of the discoidal cell. (Length $1\frac{1}{2}$; wings, 3 lines.) Every where common.

GEN. III.—APTERINA.

Borbori, *modo alæ et halteres abbreviati*.

Borborus B. Meig. VI. 209.

Apterina. Macq. S. à B. II. 573. VIII.

Sp. 1. A. pedestris.

Borborus pedestris, Meig. VI. 209. No. 30.

Apterina pedestris, Macq. II. 574. No. 1.

Dull black, hairy : arista pubescent : scutel very obtusely triangular : abdomen of male short, clavate, 2d segment very large, with a longitudinal line ; those which follow very short, the last large : legs long and hairy ; thighs thick, especially the fore pair ; hind shanks with a curved spur ; 2d joint of the feet twice as long as the 1st, not thickened ; 1st joint of the fore pair unguiculate in the male : poisers abortive, dusky : wings shorter than the thorax : nerves disposed as in *Borborus*, but indistinct ; the 2d cross nerve falling on the margin, and forming a continuation of the costal. (Length $1\frac{1}{2}$ — $1\frac{3}{4}$ line.)]

Mr. Dale has taken this species in Dorsetshire. I found it near London. It occurs in the north both of Germany and France.

GEN. IV.—LIMOSINA.

Arista pubescens basi geniculata. Areola analis incompleta.

Nervi transversi approximati. Nervi longitudinales 4^{us}. et 5^{us}. abbreviati.

Borborus A. e. Meig. VI. 207.

Limosina . . . Macq. S. à B. II. 571. VII.

Front bristly : arista pubescent, the 1st joint a little elongated : scutel large, flat, with long bristles : middle legs elongated, the shanks usually with lateral spines or bristles ; no spur at the end of the hind shank : costal nerve of the wing often bristly at the base ; the 2d main nerve distant from the tip ; the 4th and 5th vanishing beyond the principal cross nerve, which is remote from the margin : no anal cell, nor any complete one above the discoidal.

A. *Antennæ oblique porrectæ.*

B. *Scutellum disco glabrum, nudum.*

C. *Segmentum 4^{tum}. abdominis in mare utrinque cirrosum.*

Sp. 1. L. silvatica. *Nigra nitida, alis subhyalinis ; halteribus fuscis.*

Borborus silvaticus, Meig. VI. 207. No. 24.

Curtis, B. E. 469. No. 24.

Limosina silvatica, Macq. S. à B. II. 572. No. 1.

Mycetia claripennis, Rob. D. 806. No. 3.

Shining black, frontals dull blackish brown; face testaceous; arista very delicately pubescent: scutel long, with two marginal and two apical bristles: fourth segment of the abdomen in the male furnished at each angle with a long curved tuft of hair: legs long, pubescent; spines of the middle shanks few and distant; 2d joint of hind feet more than twice as long as first, linear, not thickened. In the male the middle legs are different; the thighs are bearded and armed with a long spine at the base beneath; the shanks have a pencil of hair within, about the middle; the 1st joint of the feet is compressed, hollowed out below, and bearded: poisers blackish brown: wings hyaline or yellowish: nerves dusky; the costal blackish, ciliate at the base; the 2d main nerve terminating halfway between the 1st and 3d; the latter a little sinuous, running to the tip of the wing: the discoidal cell longer than usual, with its posterior angle rounded. (Length $1\frac{3}{4}$, wings, $3\frac{1}{2}$ lines.)

Abundant, particularly on fungi; the variety with limpid wings on sandy coasts

CC. *Segmentum 4^{um}. abdominis nudum.*

D. *Halteres nigri capitulo albido.*

Sp. 2. L. limosa. *Nigra, alis infuscatis; scutelli setis bis quaternis.*

Copromyza limosa, Fallén, *Heterom.* 8. No. 6.

Borborus limosa . Meig. VI. 207. No. 23.

Limosina limosa . Macq. *S. à B.* II. 572. No. 2.

Nerea riparia . Rob. D. 802. No. 1.

Dusky black: front thickly set with bristles: face short, very much elevated between the antennæ, brownish: thorax often dull rusty brown: scutel long, produced beyond the metathorax; with three bristles at each side, and two at the tip: abdomen dull black: legs black, thinly hairy, the middle shanks thickly armed with spines, and the same pair of feet bristly: 2d joint of hind feet linear, twice as long as the first: poisers black, with a whitish knob: wings brownish: costal nerve bristly at the base; 2d main nerve continued nearly to $\frac{2}{3}$ of the interval between the 1st and 3d, the latter reaching the tip of the wing: interval of the cross nerves about twice as long as the principal one. (Length $1\frac{1}{2}$; wings, 3 lines.)

Very abundant on putrescent vegetable matter in most situations.

Sp. 3. L. humida. *Nigra, facie albida; scutelli setis quaternis.*

Form of the last, but with much fewer and slighter bristles on every part; one only at each side of the scutel, which is not so long: the face is hoary: thorax with dull blue reflections: abdomen of a glaucous tinge: legs and base of the costal nerve simply pubescent: wings obscure hyaline: nerves as in the last.

Not rare about muddy drains, near Holywood. Mr. Walker has taken it in England also.

DD. *Halteres unicolores, vel basi pallidiores.*

Sp. 4. L. arcuata. *Nigra, tibiis tarsisque ferruginosis; alarum nervo 3^{to}. subarcuato; scutelli setis bis quaternis.*

Limosina arcuata, Macq. S. à B. II. 572. No. 4.

Like *L. limosa*, face less elevated: fore coxae, both extremities of the shanks, and the feet reddish brown: poisers dusky red: wings obscure hyaline or brownish: nerves rust brown, costal bristly at the base; 2d main nerve extending over $\frac{2}{3}$ of the interval between the 1st and 3d, the latter curved, and terminating before the tip of the wing: interval of the cross nerves one half longer than the principal one: size of *L. limosa*; sometimes but half the size.

Every where rather common in shady situations, on fungi, &c.

Sp. 5. L. geniculata. *Nigra, coxis anticis, genubus tarsisque ferruginosis; alis infuscatis; halteribus fuscis; scutelli setis bis ternis.*

Limosina geniculata, Macq. S. à B. II. 572. No. 3.

Resembles the last, but the wings are as in *L. limosa*: the scutel has two bristles on each side: one half smaller than *L. limosa*.

I have found this species near Holywood, and Mr. Walker has taken it in England; but it seems very uncommon.

Sp. 6. L. crassimana. *Nigra alis infumatis; halteribus fuscis; tarsis crassis; mas, tibiis anticis clavato-compressis.*

Nerea stercorearia, Rob. D. 803. No. 2?

Black; the front sometimes with a narrow reddish margin: arista finely pubescent: scutel scarcely so long as the metathorax (with but four bristles, as in all which follow to the end of this section): legs more pubescent than in any of the following; spines or bristles of the middle shanks scattered: feet thick; fore pair

evidently dilated in the male, in which also the fore shanks are clavate and furrowed, and the hind feet have two joints dilated : poisers brown or blackish : wings rarely hyaline, generally dusky : nerves darker ; base of the costal ciliate with short hairs ; the 2d ending nearer to the 3d than 1st : interval of the cross nerves generally one-half longer than the principal one. (Length 1; wings $2\frac{1}{3}$ lines, sometimes less.)

In profusion every where on dunghills and hotbeds, more rarely on fungi.

Sp. 7. L. ochripes. *Nigra capite pedibus que rufis; tarsis posticis nigris.*

Borborus ochripes, Meig. VI. 209. No. 29.

Limosina ochripes. Macq. S. à B. II. 572. No. 5.

Head tawny red, a dot on the crown, and the occiput black ; antennæ black, or red at the base : arista very delicately pubescent : thorax and abdomen black : scutel shorter than metathorax : legs pubescent, tawny ; hind feet, generally also the fore pair and ends of fore shanks, blackish ; middle shanks with few bristles ; 2d joint of hind feet linear, twice as long as first : poisers whitish : wings almost hyaline : nerves pale ; base of the costal pubescent ; 2d half way between 1st and 3d ; interval of cross nerves nearly twice as long as the principal one : generally larger than the preceding.

Not rare on sandy coasts of Ireland. New Forest, and near London ; Mr. Walker.

Sp. 8. L. scutellaris. *Nigra scutello aterrimo; facie, coxis, genibus que testaceis; halteribus albidis; tarsorum posticorum articulis duobus incrassatis.*

Like the last in character : head black, face and fore margin of the front pale testaceous : thorax glossy black : scutel elongate, opaque, deep black : abdomen dull black : shanks and feet dusky : the fore coxæ, the base of the shanks, often the entire of the middle shanks and feet testaceous or rust brown : 2d joint of the hind feet twice as long as the first, and thickened : poisers whitish : wings hyaline, with pale brown nerves, the costal darker ; 2d terminating much nearer to the 3d, which does not quite reach the tip of the wing : smaller than No. 6.

With No. 6, but not common ; north of Ireland. Near London ; Mr. Walker.

Sp. 9. *L. nivalis*. *Nigra facie pedibusque ferruginosis; halteribus et alis abbreviatis.*

Borborus nivalis, *Ent. Mag.* I. 178.

Curt. B. E. 469. No. 29^d.

Dusky black : face dull rust colour : areola finely pubescent : scutel shorter than metathorax : legs pubescent, dull rust colour ; thighs and often the middle of the posterior shanks dusky ; 2d joint of hind feet not dilated : poisers abortive, dusky : wings not extending to the end of the abdomen, sometimes very small, brownish : no second cross nerve : about as large as No. 6.

Not uncommon during the winter about the roots of trees in the north of Ireland : leaps very actively.

Sp. 10. *L. quisquilia*. *Nigra alis infumatis; halteribus fuscis; tibiis mar. simplicibus.*

Resembles *L. crassimana* both in size and character, but the feet are slender, and the fore shanks not clavate in the male : from most of the small species which follow, it differs by the longer scutel and more pubescent legs : I consider it as distinct, though not satisfactorily characterized.

Has occurred once or twice along with *L. crassimana*.

Sp. 11. *L. fungicola*. *Nigra nitida, fronte opaca; halteribus nigris; alarum lineola costali nigra.*

Glossy black : the pubescence very fine : front opaque, deep black, with a glossy triangle : face elevated between the antennæ, rather hoary : legs slender, scarcely pubescent : fore knees and middle feet brown : middle shanks with only a pair of bristles on the outside : 2d joint of hind feet one half longer than 1st, and somewhat thickened : poisers black : wings ample, blackish, rarely hyaline : nerves dusky ; the costal pubescent at the base ; black from the 1st to the 2d main nerve ; the latter extends scarcely half way from the 1st to the 3d : the sub-marginal cell is wider than usual ; the interval of the cross nerves almost twice as long as the principal one : smaller than No. 6.

Inhabits fungi, Holywood. North Devon, and near London ; Mr. Walker.

Sp. 12. *L. erratica*. *Nigro-fusca facie pedibusque ferrugineis; halteribus fuscis; alis infumatis.*

Approaches the last in character : the marginal and sub-marginal

cell of the wings are much narrower, the cross nerves less distant: the legs sometimes are entirely ferruginous; in others the thighs and the middle of the shanks are pitchy; or the legs are blackish, with the knees and feet ferruginous: wings brownish, with distinct brown nerves, the costal not incrassate: from the following it differs by the wings, the 2d joint of the hind feet not thickened, &c.; but I am not satisfied that all these varieties belong to one species, or that some of them may not connect the present with the last.

Sp. 13. *L. clunipes. Nigro-fusca facie pedibusque ferrugineis; halteribus fuscis; alis hyalinis: tarsorum posticorum articulis duobus incrassatis.*

Borborus clunipes, Meig. VI. 208. No. 26.

Limosina clunipes, Macq. S. à B. II. 573. No. 7.

Dusky: margin of the front and the face ferruginous: arista thickly pubescent: breast and legs ferruginous: 2d joint of hind feet nearly twice as long as 1st, and a little thickened: wings hyaline: the nerves nearly colourless, disposed as in the following; the costal ferruginous, slightly ciliate at the base, but without a spine, and a little thickened along the middle: scarcely so large as No. 18.

Occurs along with No. 6, but rare. Mr. Walker takes it in England.

Sp. 14. *L. spinipennis. Nigra pubescens halteribus nigris; alis denigratis, costa incrassata, basi spinigera.*

Rather dull black: face elevated between the antennæ: arista with thick black pubescence: thorax thickly pubescent: more bristles on the middle shanks than in *L. fungicola*; 2d joint of the hind feet scarcely thickened: poisers black: wings blackish: costal nerve thickened along the middle, somewhat bristly at the base, with a long erect spine springing near the root: 2d nerve ending half way between the 1st and 3d; interval of cross nerves rather longer than the principal one: size of No. 18.

Occurs but rarely, in company with No. 6.

Sp. 15. *L. heteroneura. Nigra, facie pedibusque ferruginosis; alis infuscatis, nervis transversis fere contiguis.*

Black, pubescent: face reddish: arista thickly pubescent: legs nearly naked, dusky; the fore pair, the knees and shanks rust brown: middle shanks with a pair of bristles only on the outside: poisers

brown : wings brownish : the costal nerve a little bristly at the base ; 2d nerve as in the last : interval of the cross nerves not longer than the small one. (Less than No. 18.)

In the same situations.

BB *Scutellum setis aspersum.*

Sp. 16. *L. fuscipennis. Nigra pedibus piceis; alis infuscatis; halteribus fuscis capitulo pallido.*

Borborus fuscipennis, Ent. Mag. I. 178.

Resembles *L. limosa* very much ; the legs are rather shorter and more hairy, and the cross nerves less distant : dusky black : face very short and elevated between the antennæ, so that the head is nearly triangular above : front thickly set with bristles, its fore margin piceous : palpi reddish : thorax and scutel often dull rust brown : scutel elongate, with several bristles at the sides, and a few on the disk : abdomen opaque black : legs hairy, pitchy brown : middle pair very thickly armed with spines or bristles ; 2d joint of hind feet not thickened : poisers yellowish, with dusky base : wings brownish : the nerves nearly as in *L. limosa*, and dusky. (Length $1\frac{1}{4}$; wings 2½ lines, sometimes much less.)

Inhabits sea-weeds drying on the shore.

BBB. *Scutellum pubescens.*

Sp. 17. *L. vagans. Nigra opaca, alis infumatis; halteribus flavidis.*

Borborus vagans, Ent. Mag. I. 178.

Dull black : eyes small : arista finely and thickly pubescent : scutel as long as the metathorax : legs pubescent, dusky, with the fore coxæ and knees, and the middle feet rust brown ; sometimes the legs are entirely of the latter colour : middle shanks with numerous bristles ; 2d joint of the hind feet twice as long as the 1st, not thickened : poisers yellowish : wings brownish yellow ; nerves of the same colour ; costal more dusky, bristly at the base, rather thick : 2d nerve extending over $\frac{2}{3}$ of the interval between the 1st and 3d : interval of the cross nerves longer than the principal one. (Length 1 ; wings 2 lines, or less.)

Not rare on sea-weed.

Sp. 18. *L. lugubris. Nigra pubescens, alis denigratis; halteribus fuscis.*

Face piceous : eyes larger than in the last ; scutel shorter ; colour deep black : middle shanks and feet dusky : middle shanks with

fewer bristles; 2d joint of hind feet shorter: wings blackish: base of the costal nerve less bristly, 2d ending half way between the 1st and 3d; cross nerves not so distant. (Length $\frac{5}{4}$; wings $1\frac{1}{2}$ line.)

Common in the same situations with No. 6.

AA. *Antennæ in latera aversæ.*

B. *Oculi nudi.*

C. *Areola marginalis costam medium superans.*

Sp. 19. L. zosteræ. *Nigra opaca alis infumatis.*

Borborus zosteræ, Ent. Mag. I. 178.

Opaque black: front gibbous, bristly: face much elevated between the antennæ, which are turned in opposite directions, lying close to the eyes; their 2d joint is very bristly, and larger than the 3d: the arista thickly pubescent, the pubescence whitish: thorax scarcely pubescent, very flat, with an impressed line down the middle: scutel not as long as the metathorax; glabrous, with four bristles, as also in those which follow: legs rather short, thinly hairy, piceous, with the knees and feet tawny, or entirely tawny: middle shanks armed with numerous bristles: 2d joint of hind feet not very long, scarcely thickened: poisers with a deep brown knob: wings of a brownish yellow, the nerves of the same colour; costal more dusky, rather thick, bristly at the base; 2d nerve extending little more than half way between the 1st and 3d: intervals of the cross nerves considerably longer than the principal one. (Length $1\frac{1}{4}$; wings 3 lines.)

There is a variety scarcely a third that size, but differing so little in other respects, that I cannot consider it a distinct species.

Common on sea-weed: Mr. Walker has found it near London; and also in the Isle of Wight, Cornwall, and North Wales.

Sp. 20. L. leucoptera. *Nigro-fusca, alis albis, costa nigricante.*

Dusky with paler legs: eyes small: arista with thick whitish pubescence: scutel short, nearly semicircular: middle shanks bristly; 2d joint of hind feet long and scarcely thickened: poisers brown: wings whitish; the costal nerve and those next to it dusky, the rest colourless; the costal region dusky towards the end: costal nerve with a few bristles at the base, a little thickened from the 1st to the 2d main nerve; the latter ending much nearer to the 3d; marginal cell long and very narrow; sub-

marginal broad not extending quite to the tip of the wing : interval of the cross nerves equal to the principal one. (Rather less than No. 18.)

The examples which I have before me are not in good order, but the small eyes, the 2d joint of the antennæ, which is very bristly, and the wings satisfy me that the species is better placed in this section than in A. Taken by Mr. Walker, near London.

CC. *Areola marginalis perparva*.

Sp. 21. L. nigerrima. *Atra velutina alis albis*.

Borborus nigerrimus . . . *Ent. Mag.* I. 178.

— *Curt. B. E.* 469. No. 29^b.

Limosina minima . . . *Macq. S. à B.* II. 573. No. 9.

Deep black, without gloss : pubescence of the arista abundant, whitish : the feet short : middle shanks almost naked : poisers black : wings white hyaline ; nerves colourless, the costal blackish, not thickened : the 2d nerve scarcely reaches to the middle of the rib, the 3d is arched and terminates before the tip of the wing ; the marginal cell therefore is exceedingly small, the submarginal wide and oblong ovate : the cross nerves are almost contiguous. (Length not $\frac{1}{2}$, wings 1 line.)

Occurs along with No. 6, but very rare : Mr. Walker has taken it near London.

BB. *Oculi hispiduli*.

Sp. 22. L. melania. *Atra opaca alis hyalinis*.

Resembles the preceding very much : deep black, opaque : eyes small, with minute erect hairs ; arista thickly pubescent : legs piceous, middle shanks almost without bristles : poisers black : wings hyaline : nerves darker, very delicate, the costal blackish ; 2d extending nearly half way between the 1st and 3d ; the latter scarcely arched, nearer to the tip of the wing than in the last species : interval of the cross nerves equal to the principal one. (Length not $\frac{1}{2}$ line.)

Found with the last, but still more uncommon.

GEN. V.—HETEROPTERA.

*Limosinæ characteres sed nervus ordinarius transversus
valde obliquatus.*

Borborus A. d. . *Meig.* VI. 206.

Heteroptera . . *Macq. S. à B.* II. 570. v.

Sp. 1. H. pusilla.

Copromyza pusilla . Fallén, *Heterom.* 8. No. 5.
Borborus pusilla . Meig. VI. 206. No. 22.
Heteroptera pusilla . Macq. *S. d B.* II. 570. No. 1.

Resembles a *Limosina*: the principal cross nerve is placed so slanting that it becomes confounded with the 4th main nerve, but forms with the 5th a very acute angle advanced towards the margin of the wing: the 2d nerve is also continued nearer to the tip: black: thorax and scutel pubescent; the latter shorter than the metathorax: legs finely pubescent; not many bristles on the middle shanks; first joint both of the fore and hind feet acutely produced at the tip, in the latter triangular: poisers whitish: wings whitish hyaline, or dusky; nerves blackish brown. (Length 1; wings 2 lines.)

Taken by Mr. Walker, near London; and in the Isle of Wight.

The larva of *Borborus equinus* is like that of *Scatophaga stercoraria* in general form. The skin is quite transparent, so that the internal structure and the minutest ramifications of the tracheæ can be seen through it; but I could not discover any trace of arterial circulation. The pulsations of the dorsal vessel were from 90 to 110 a minute. The skin is closely set with very minute erect points or short bristles, most thickly on the last segment. The mandibles come out under two conic processes of the head, each of which bears a smaller appendage of similar form on the upper side. The anterior opening of the tracheæ is furnished with the usual fan-like process. The intermediate segments have no inequalities of any kind. The last has the usual conic protuberances behind the anal cleft, and its margin bears a circle of smaller ones; those being the least which lie immediately above and below the openings of the tracheæ, which are of the usual form, each consisting of three oblong spiracles surrounded by a dark ring. The full grown larvæ, when extended, are about $4\frac{1}{2}$ lines in length. They do not enter the ground to undergo their transformation. Of a number out of eggs laid, the first week of October, but few had changed at the end of that month; but probably the period is less in summer, as Meigen says that

Sphærocera equina undergoes all its transformations in eighteen days. The puparium is about 3 lines long, of a bright chestnut, cylindric, with the anterior extremity a little attenuate, bearing two protuberances the remains of the anterior spiracles; the other end is blunt, the conic processes of the last segment remaining as a number of small points. The whole surface is very finely shagreened.

Synopsis Specierum.

<i>Sphærocera, Macq.</i>	<i>Limosina.</i>
subsultans, <i>Fabr.</i>	arcuata, <i>Macq.</i>
monilis, <i>Hal.</i>	geniculata, <i>Macq.</i>
vaporiariorum, <i>Hal.</i>	crassimana, <i>Hal.</i>
denticulata, <i>Meig.</i>	ochripes, <i>Meig.</i>
scabricula, <i>Hal.</i>	scutellaris, <i>Hal.</i>
Borborus, <i>Macq.</i>	nivalis, <i>Hal.</i>
nitidus, <i>Meig.</i>	quisquilia, <i>Hal.</i>
suiorum, <i>Hal.</i>	fungicola, <i>Hal.</i>
niger, <i>Meig.</i>	erratica, <i>Hal.</i>
equinus, <i>Meig.</i>	clunipes, <i>Meig.</i>
nigrifemoratus, <i>Macq.</i>	spinipennis, <i>Hal.</i>
flavipennis, <i>Hal.</i>	heteroneura, <i>Hal.</i>
longipennis, <i>Hal.</i>	fuscipennis, <i>Hal.</i>
vitripennis, <i>Hal.</i>	vagans, <i>Hal.</i>
ater, <i>Meig.</i>	lugubris, <i>Hal.</i>
Apteria, <i>Macq.</i>	Zosteræ, <i>Hal.</i>
pedestris, <i>Meig.</i>	leucoptera, <i>Hal.</i>
Limosina, <i>Macq.</i>	nigerrima, <i>Hal.</i>
silvatica, <i>Meig.</i>	melania, <i>Hal.</i>
limosa, <i>Fall.</i>	Heteroptera, <i>Macq.</i>
humida, <i>Hal.</i>	pusilla, <i>Fall.</i>

ART. XXXI.—*Portions of a Letter from the Author of the Letters of Rusticus to Edward Newman.* Published by Permission of the Writer.

DEAR NEWMAN,—The heat of the weather kills me. I wish the comet would take some other course. Why does he wreak his vengeance on the earth. Why don't he parch up Jupiter; or if he must come here, why don't he do, as Washington Irving says he ought—deluge the earth with water. Indeed I hear he is soaking the Scotch and Irish, at the very time that he is roasting us. I have not seen him yet: I suppose he is not visible—pray goodness he never may be; if he come within eyeshot he'll roast us alive. The ground is

already cracked, as though the earth were about to open to the centre ; we shall want leaping poles to cross the chasms.

Did you ever observe the flies on the sunflowers cleaning themselves ? They first have a good long feast of honey, and cover themselves with pollen ; eyes, legs and wings, all as yellow as gold. When one of the thieves has managed to get so polleny that he can't see, he sets to work to clean himself : it is most amusing to see his operations ; the hind legs clean the wings, and the fore legs the head ; with great skill the pollen is scraped off the head, eyes, and face, and then rolled up into pellets by the fore legs and thrown away with a kind of jerk. I have seen this done fifty times. The humble bees on a sunflower are also very odd-mannered ; they get as drunk as Bacchus or Silenus ; then they get sleepy as Morpheus, and cross as Cerberus ; if you touch one he leans on one side, cocking up the opposite legs into the air, and plays divers other antics, till with his various trials to show that he is sober, and able to fight and defend himself, he sidles, staggers, rolls, and falls to the ground, and there lays on his back till he has slept himself sober.

I have to-day cut open codling after codling, and found the pips regularly garrisoned with *aphites*—mark the termination—not one lone *aphis*, but a whole troop of all sizes. When I let in the daylight there was a considerable sprawling and waving of legs, and no small alarm in the hive, but by degrees they got used to light and fresh air, and were quite still. I tried to tickle them with a straw in order again to watch their movements, when lo and behold, they were dead,—gathered to their fathers,—gone to the tomb of all the Capulets. Some had heaved anchor and dropped from the pip ; others fixed more firmly had died at their post, and tucking their legs together under them, hung by their beak. In no apple was there any road in or out ; there was no chance of their passing to the outer air, or of their having come from it ; indeed their speedy death proved that change of air did not agree with them. I was particularly careful in my search for a *via*, but there was none. I have often seen the same thing in a bloated poplar leaf ; but here is a possibility of the egg being laid between the cuticles of the leaf, then the sap-suction commencing, the bloat may be caused ; but this is impossible in a huge apple, with an inch and a half of pulp in every direction.

I am quite unable to explain the mystery, so, like many other wiseacres, I content myself with wondering how, in the name of fortune, the aphites got there.

Another odd station for aphites is on the roots of plants. I have found them by hundreds on a thistle root, closely packed together, and almost as white as snow. The other day I pulled up a large thistle that grew on an ant-hill, and thus I brought to light a whole colony of these white aphites. I had long known of the great value which ants set on these little beasts, so I shook down some dozens of them from the thistle root, among the ants, which were all a-swarm at the damage I had done to their dwelling. No sooner were the ants aware of the presence of the aphites than they began to fondle them with their legs—sometimes positively taking them round the neck—to tap them on the back with their antennæ, and to lick them with their tongues; they then took hold of them with their jaws, lifted them from the ground, and carried them with the greatest care, one by one, into the recesses of the nest.

I walked by the same way about three hours afterwards, and found the nest all quiet and orderly, and not an aphis was to be seen; so I went to work with my knife and scraped down the side of the hill. I soon came to the aphites; they were clustered together on little bits of thistle root, which had been broken off in the ground, and were attended by numbers of ants. As soon as the ants found their cattle were again in jeopardy, they drew them gently from the root and carried them still further into the nest. I am quite convinced that honey-dew is the excrement of aphites, and that ants devour this honey-dew, and a sweet clear liquid honey it is. I have often watched an ant go from one aphis to another, stand behind each, and gently squeeze the body with its fore legs; perhaps one aphis in ten, not more, will give out a small drop of honey as clear as crystal, which the ants instantly swallow. The ants take much more care of the aphites than the aphites do of themselves: they are sad dull, stupid creatures. It is very pretty to see the licking and washing and cleaning and caressing which the ants constantly bestow on them. When the aphites cast their skin, the ants instantly carry it away, nor will they let any dirt or rubbish remain among them or on them. But the most amusing care of the ant is guarding

the aphites from the attacks of that little parasitic fly, whose operations Mr. Haliday has so well described.^a You must have seen a sheep-dog run over the backs of a whole flock of sheep, when closely crowded together, in order to bring back some sinner that has gone astray ; so will the ants in the hot sunshine run about over an establishment of aphites, driving away the rascally parasite that is for ever hovering about them to destroy them. Believe me ever yours,

Godalming, 15th August, 1835.

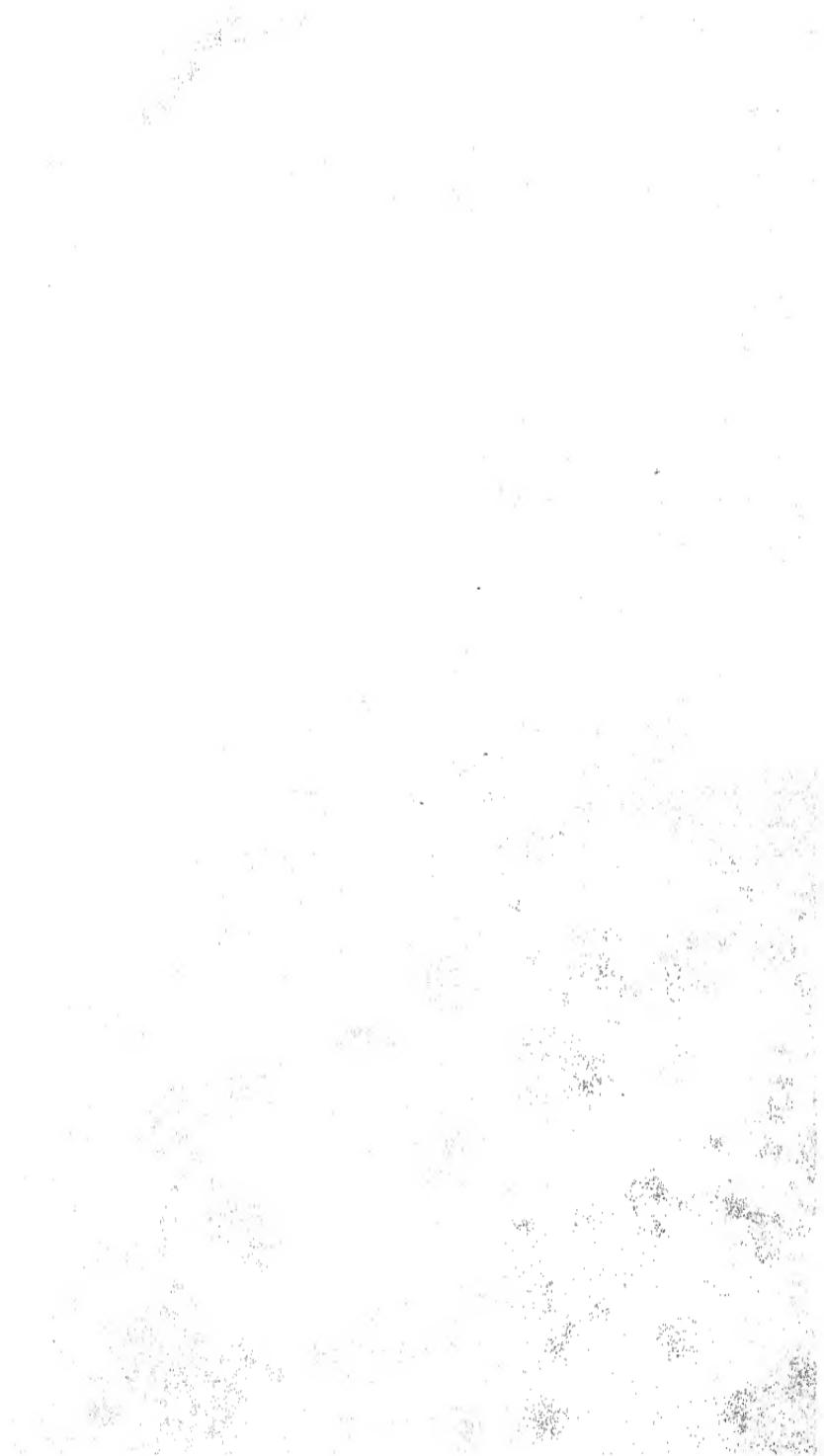
P. S. I forgot to tell you that all our turnips this year are destroyed by the *blacks*; and I begin to think that these are the real turnip-*fly*, the smaller animal being only the turnip-*flea*. About the middle of July these real turnip-flies were showered down on us, as it were from the clouds ; they fell thicker than rain drops, and hovered about the turnips in such myriads that the whole fields were coloured with a rainbowy tinge, when the hot sun shone on the filmy gauzy wings of the flies. I will give you an entomological description of one of these flies :—the head and antennæ are as black as a coal : the thorax is yellow before and on the top, but coal black on the sides and behind : the body is yellow : the wings are clear and very shining, and tinged with yellow, and the upper ones have a dash of coal black along the upper margin, which reaches three quarters of the way from the thorax to the tip of the wing : the legs are yellow, spotted with black. I could not find that these flies tasted the turnips ; they only came to them on family business.

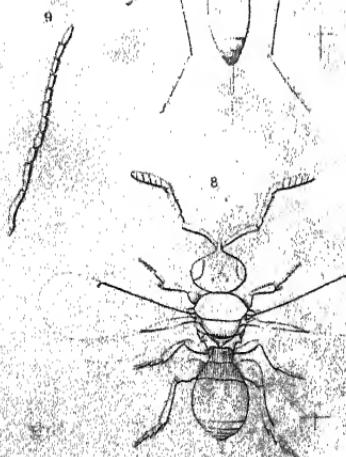
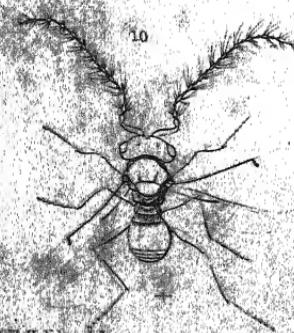
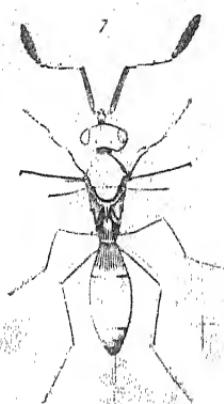
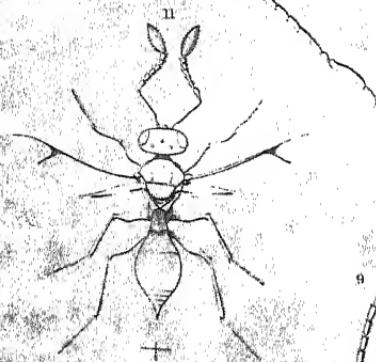
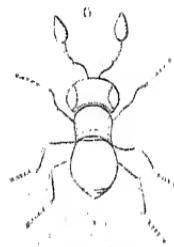
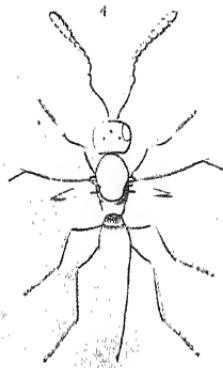
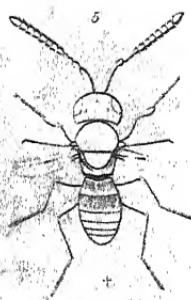
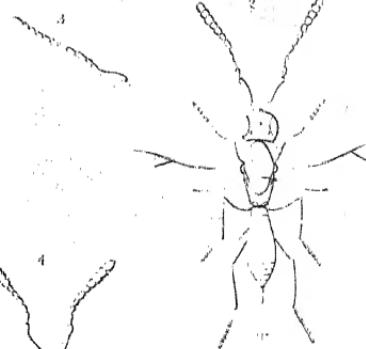
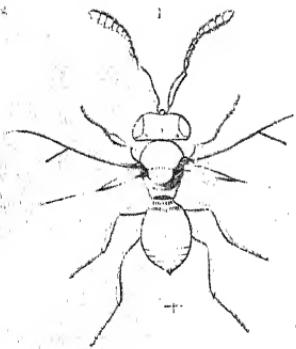
About the 9th of August the turnips began to look queer ; the flies had disappeared almost entirely before this, you must recollect. One Saturday I looked well over them, and found they were swarming alive with little black caterpillars. I told two or three men who were hoeing them that the turnips looked bad, and I showed the grubs to them, but they thought nothing of it, and I found I could not persuade them that any thing was the matter. On Sunday I could not get out as far as a turnip-field. On Monday I went out and the turnips *were not* : they had in two short days been swept from the face of the earth. The land was every where as bare as on the

^a Ent. Mag. Vol. II. p. 98.

day it had been sowed. There was no speck of green for the eye to rest upon. It was a wild and universal desolation, and the black crawling vermin that had caused the ruin were clustered in bunches on the ground, and on the remnants of the turnips, and were dying of starvation. No plague of Egypt could have been more effective: the mischief was complete. Some few fields received the blast a few days later than others, but all had it; not one escaped unless the crop were Swedes, and it is remarkable that these were untouched. I need not tell you that I boxed some of the grubs, to learn something of their history, but have not progressed in the affair yet. I am certain the grubs are the produce of the fly; the eggs were laid on the young leaves of the turnips, and hatched and turned into grub. The build of the grub proves beyond a doubt that it is the larva of the fly. It is rather rough coated, but without hairs; it is of a dull leaden sort of black colour, and has a lighter line along each side; it has twenty feet. It is fond of resting on the leaf curled up in a ring, and if disturbed tumbles on the ground without opening; indeed, if not in a ring before, it rolls itself into one when touched. I send you a pen and ink sketch both of the grub and fly. The grub is the natural size; the fly is of the length and breadth of the cross below it: the parts I have left white are yellow. I think I have done it accurately enough for you to tell me the name.^b I find, on referring to the accounts of the enemies of turnips, that these *blacks* were well known formerly, but the race seems to have become extinct and forgotten. I find a hundred recipes for their destruction, all of which are moonshine, except one, which is for a wonder rational. It is this:—buy an immense lot of ducks, and turn them in your turnips, and they will devour the grubs by millions, and become in a few days as fat as butter. Thus two birds are killed with one stone—the ducks fatted and the turnips saved. When we get on a little further with our inquiries into the history of animals, especially such little things as insects, you may depend upon it we shall find the best way to check the increase of any hurtful kind is to encourage any other animal, beast, bird, fish, or insect, that makes the injurious

^b The insect described is the *Athalia spinarum* of most entomological cabinets, but is described by Stephens as the *Tenthredo centifoliae* of Panzer; *Athalia centifolia*, Stephens.





one its prey. You see Providence has foreseen that the earth might at any time be desolated, actually unpeopled, by the natural increase of many kinds of insects, and has provided against it. I have calculated that the common tiger moth caterpillar is every year produced in this island in sufficient numbers to eat up every green leaf or blade of grass; to starve all our sheep, cows and horses, and so to deprive us entirely of either animal or vegetable food. You know this caterpillar eats almost every thing; well, of all caterpillars this has the most parasites, so many, that not more than one egg out of fifty thousand produces a moth; thus its voracity and its productiveness are rendered harmless. I'll be bound you would laugh when I tell you I breed lady-birds on purpose to destroy aphites; but it is true, and I assure you it answers capitally. You may depend on it the blacks have some natural enemy besides ducks: if not, ducks would do very well, except that the demand for ducks would be greater, I fear, than the supply; but a farmer, especially if he has water, ought to keep an immensity of ducks, they are always *useful*, as they eat such lots of slugs and other vermin, and if within a moderate distance of London, always *saleable* at a paying price.

ART. XXXII.—*On the Species of Teleas, &c.* By FRANCIS WALKER.

THE upper abdominal segments form an edge to those beneath in this tribe, as in *Platygaster*, &c. but the *Teleadidæ* possess a more developed structure, their feelers and antennæ generally have more joints, and a nervure runs along the upper border of each wing; that of the fore wing sends forth a little branch, and is often continued to near the tip; some of them have an outward likeness to *Encyrtus*, *Mymar*, &c. and are parasites of the eggs of other insects; they have also the faculty of leaping, which the *Platygastres* have not: *Scelio*, however, possesses this faculty only in a very small degree, and differs in other respects from the type: *Sparasion* has the parts of the mouth much more developed, and can hardly be considered to belong to the same tribe; it runs with great swiftness, but does not leap.

non conspicuum	I. BÆUS.
	Scutellum {
sessile; {	segmenta {
eius {	subaequalia
ad costæ {	segmentum {
medium. {	2 ^{mm.} longius.
Abdomen {	
	costalis. {
	Nervus {
	cubitalis {
	prope costæ {
	apicem.
	Mari antennæ : {
	conspicuum.
	Alæ nervus {
	subcostalis.
	Palpi maxillares {
	breves
	longi
	II. GRYON.
	III. TELENOMUS.
	IV. THORON.
	V. XENOMERUS.
	VI. TELEAS.
	VII. SCELIO.
	VIII. SPARASION.

GEN. I.—BÆUS—*Haliday*.

Fem.—“Corpus brevissimum, contractum, apterum: scutellum nulum: antennæ breves clava compacta 5-annulata, ovato-acuminata.”—*Haliday*.

Sp. 1. *Bæus seminulum* (*Haliday*, Ent. Mag. I. 270.) *Ater, antennæ et pedes picca, genua et tarsi pallidiora*. (Pl. XIII. fig. 6.)

Ater, convexus, altissimus, glaber, subtilissime punctatus, parum nitens: caput magnum, thorace multo latius; frons convexa: oculi ocellique picei: antennæ piceæ, capitatae, 11-articulatae, corporis dimidio longiores; articuli 3°. ad 6^{um}. minimi; 7°. ad 11^{um}. latissimi, clavam fingentes ovatam maximam: thorax subcubicus: abdomen subrotundum, thorace latius vix longius; segmentum unum ejus dorsum fere totum occupans: pedes picci, validi, saltatorii; genua et tarsi pallidiora, hi apice fusci. (Corp. long. lin. $\frac{1}{5}$.)

August; on windows and among grass in fields; near London. Taken during the same month, by Mr. Haliday, in new mown meadows in Galway, Ireland.

GEN. II.—GRYON—*Haliday*.

“Antennæ 12-articulatae maris flagello filiformi crassiusculo, feminæ clava 5-annulata: palpi maxillares 3-articulati: ramulus stigmatisalis brevis: abdomen ovatum segmentis anterioribus æqualibus tertio breviore.”—*Haliday*.

Sp. 1. *Gryon Nanno*. Mas. *Ater, antennæ et pedes rufa, alæ fuscæ*.

Ater, subtilissime punctatus, glaber, parum nitens: caput longiusculum, thoracis latitudine: oculi ocellique picei: antennæ rufæ, moniliformes, capitis thoracis que longitudine, apice graciliores; articuli 3°. ad 11^{um}. transversi, approximati, brevissimi; 12^{us}. conoides, acuminatus, 11°. longior: thorax ovatus, parum convexus: mesothoracis parapsidum suturæ conspicuæ; postscutelli dorsum spinam brevem validam emittens: abdomen longiovatum, planum, glabrum, nitens, lœve, thorace paullo latius et dimidio longius; segmenta 1^{um}. omnino 2^{um}. que basi sulcata; 3^{um}. longius: pedes rufi; tarsi apice fusci: alæ fuscæ, breves,

angustæ; squamulæ piceæ; nervi fusti, metalæ sublimpidæ.
(Corp. long. lin. 1; alar. lin. 1½.)

June; New Forest, Hampshire.

Sp. 2. *Gryon Phlias.* Fem. *Ater, antennæ nigræ, pedes picei, alæ sublimpidæ.* *T. Nanno.* Fem.?

Ater, subtilissime punctatus, glaber, parum nitens: caput longiusculum, thoracis latitudine: oculi ocellique picei: antennæ nigræ, clavatae, thoracis longitudine; articuli 3°. ad 7^{um}. minimi 8°. ad 12^{um}. clavam fingentes fusiformem: thorax ovatus, parum convexus: meso-thoracis parapsidum suturæ conspicuæ: postscutelli dorsum spinam brevem validam emittens: abdomen longi-ovatum, planum, glabrum, nitens, lœve, thorace paullo latius et dimidio longius; segmenta 1^{um}. omnino 2^{um}. que basi sulcata, 3^{um}. longius: pedes picei; trochanteres genua et tarsi pallidiora: alæ sublimpidæ, breves, angustæ; squamulæ piceæ; nervi fusti. (Corp. long. lin. 1; alar. lin. 1½.)

July; Forest of Fontainbleau.

Sp. 3. *Gryon Matuta.* Mas. *Ater, pedes picei, alæ fuscæ.*

Ater, brevis, latus, crassus, altus, punctatus, obscurus, glaber: caput breve, thoracis latitudine: oculi et ocelli picei: antennæ nigræ, latæ, subfiliformes, corpore breviores, apice minime angustiores: thorax rotundus, convexus, postice abrupte declivis; mesothoracis scutum et scutellum lata, maxima, parapsidum suturæ indistinctæ; metathorax supra vix discernendus: abdomen rotundum, fere planum, thorace vix longius; segmenta 3 subæqualia dorsum fingentia: pedes picei, validi; coxae obscuriores: alæ fuscæ, breves, angustæ; squamulæ piceæ; nervi fusti. (Corp. long. lin. ½; alar. lin. ½.)

July; Forest of Fontainbleau.

Sp. 4. *Gryon misellus.* (Haliday, Ent. Mag. I. 771.) Mas et Fem. *Ater, antennæ piceæ, mari abdomen basi flavum, pedes mari flavi fem. fulvi, alæ subfuscæ.* (Pl. XIII. fig. 5.)

Hemisius minutus? *Westwood, London and Edinb. Phil. Mag. &c. Third Series, II. 12. 445.*

Ater, obscurus, sublinearis, punctatus, parum convexus, brevissime pubescens: caput longiusculum, thorace paullo latius: oculi

et ocelli picci : antennæ *mari* piceæ validæ, subfiliformes, corpore paullo breviores ; scapus flavus ; articuli 3^o. ad 11^{um}. transversi, subæquales, flagellum longi-fusiforme fingentes ; 12^{us}. 11^o. multo longior, acuminatus : antennæ *fem.* nigro-piceæ, clavatae, corporis dimidio longiores ; scapus basi flavus ; articuli 3^o. ad 7^{um}. brevissimi, 8^o. ad 12^{um}. lati clavam acuminatam fusiformem fingentes : thorax breviovatus, parum convexus ; mesothoracis parapsides scuto in unum confusæ ; metathorax parvus : abdomen breviovatum, nitens, læve, glabrum, fere planum, thorace paullo longius, *mari* basi flavum, *fem.* nigrum aut piceum ; segmenta subæqualia : pedes *mari* flavi, *fem.* fulvi genibus tarsisque pallidioribus : alæ subfuscæ, angustæ, *mari* corpore breviores, *fem.* abdominis longitudine ; squamulæ piceæ ; nervi fusi. (Corp. long. lin. $\frac{3}{2}$ — $\frac{1}{2}$.)

Var. β.—Fem. abdomen basi fulvum.

Found by Mr. Haliday ; on grass under trees ; from July to October ; at Holywood and in Galway, Ireland. Near London. Taken by Mr. Davis.

GEN. III.—TELENOMUS.—*Haliday.*

Caput mediocre, breve, convexum, thoracis plerunque latitudine : mandibulæ parvæ, subtrigonæ, arcuatae, unidentatae : maxillæ subtrigonæ ; palpi biarticulati : oculi laterales, mediocres : ocelli supra verticem trigone dispositi : antennæ ad os insertæ ; articulus 1^{us}. longus, minime arcuatus ; 2^{us}. longi-cyathiformis : prothorax supra non conspicuus : mesothorax maximus ; scutellum non prominens : metathorax vix conspicuus : abdomen sessile ; segmentum 1^{um}. brevissimum ; 2^{um}. maximum ; sequentia brevia, subæqualia : alæ nervus cubitalis ante costæ medium in discum oblique descendens.

* *Antennæ fem. 10-articulatæ.*

Sp. 1. Telen. Eris. Fem. *Ater, antennæ nigro-piceæ, pedes picei, tarsi pallidiores, alæ subfuscæ.*

Ater, latus, brevis, parum nitens, punctatus, pubescens : caput thoracis latitudine : oculi ocellique picei : antennæ clavatae, nigro-piceæ, corporis dimidio multo longiores ; articulus 4^{us}. longus ; 5^{us}. brevior ; 6^{us}. adhuc brevior ; 7^{us}. et sequentes ad 10^{um}. breves, dilatantes ; 11^{us}. brevi-conoides, 10^o. vix longior : thorax brevi-ovatus, convexus : mesothoracis scutellum nitens, læve,

glabrum : abdomen brevi-ovatum, convexum, nitens, lœve, glabrum, thorace paullo longius : pedes picci ; trochanteres genua, tibiæque apice flava ; tarsi pallide fuscæ, basi flavi : alæ subfuscæ, sat latæ ; squamulae piceæ ; nervi fulvi, cubitalis longus. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{1}{2}$ — $\frac{3}{4}$.)

Var. β.—Protibiae flavæ, fusco cingulatæ.

Var. γ.—Alæ sublimpidæ.

Found by Mr. Haliday at Holywood, Ireland. September ; near London ; Isle of Wight.

Sp. 2. Telen. Coilus. Fem. *Præcedente minor brevior lœvior glabrior.*

Ater, nitens, lœvis, brevis : oculi ocellique picei : antennæ clavatae, robustæ, corpore paullo breviores : thorax convexus, fere rotundus, breviter pubescens : abdomen subquadratum, planum, glabrum, thorace brevius et angustius ; segmentum 2^{um}. ejus fere totum occupans : pedes fuscæ ; trochanteres, genua et tarsi flava ; protibiae flavæ, fusco cingulatæ : alæ subfuscæ, sat latæ ; squamulae rufo-piceæ ; nervi fulvi. (Corp. long. lin. $\frac{1}{4}$; alar. lin. $\frac{1}{2}$.)

Found by Mr. Haliday, at Holywood.

** *Antennæ articulis mari 12, fem. 11.*

† *Caput subcubicum.*

Mesothoracis parapsides scuto in unum confusæ : nervus cubitalis in alæ apicem directus.

Sp. 3. Telen. othus (Haliday, Ent. Mag. I. 271.) Fem. *Abdomen thorace plus duplo longius.* (Pl. XIII. fig. 4.)

Ater, nitens, lœvis, glaber : caput thoracis latitudine : antennæ piceæ, clavatae, graciles, submoniliformes, corporis dimidio longiores ; articuli 3°. ad 8^{um}. curtantes et dilatantes ; 9^{us}. 10^{us}. et 11^{us}. lati, subæquales, clavam fingentes fusiformem ; 11^{us}. acuminatus : oculi ocellique picei : thorax ovatus, fere planus, brevissime pubescens : abdomen fusiforme, planum, thorace plus duplo longius : oviductus fuscus : pedes picei ; trochanteres et genua rufa ; tibiæ rufo-piceæ ; meso- et metatarsi flavi, apice picei : alæ sublimpidæ, angustæ ; squamulae rufo-piceæ ; nervi flavi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{2}{3}$.)

Var. β.—Femora rufo-picea ; tibiæ rufæ.

Taken by Mr. Haliday at Holywood.

Sp. 4. Telen. laricis. (Haliday, Ent. Mag. I. 271.) Mas et Fem. *Abdomen thorace longius, pedes picei.* (Pl. XIII. fig. 2. Fem.; fig. 3. *Mas antenna.*)

Ater, nitens, lœvis, glaber: caput thoracis latitudine: oculi ocellique picei: *mari* antennæ nigro-piceæ, moniliformes, graciles, corpore paullo breviores; articuli 3°. ad 11^{um}. curtantes; 12^{us}. longi-conoides, acuminatus, 11°. multo longior: *fem.* antennæ clavatae, submoniliformes, corporis dimidio paullo longiores; articuli 3°. ad 8^{um}. curtantes et dilatantes; 9^{us}. 10^{us}. et 11^{us}. lati, subæquales, clavam fingentes fusiformem non acuminatam: thorax ovatus, fere planus, brevissime pubescens: *mari* abdomen ovatum, planum, thorace longius, quam *fem.* brevius et latius: *fem.* abdomen longi-ovatum, thorace longius: oviductus piceus, exertus: pedes picei; trochanteres et genua flava; tarsi flavi, apice picei: alæ sublimpidæ, angustæ; squamulae rufo-piceæ; nervi fusi. (Corp. long. lin. $\frac{1}{2}$ — $\frac{1}{2}$; alar. lin. $\frac{1}{2}$ — $\frac{2}{3}$.)

Taken by Mr. Haliday at Holywood. July, September; near London; North Wales.

Sp. 5. Telen. heteropterus (Haliday, Ent. Mag. I. 271.) Fem. *Abdomen thorace vix longius, pedes flavi.*

Ater, lœvis, gracilis, nitens: caput thorace paullo latius: oculi ocellique picei: antennæ fuscæ, clavatae, graciles, submoniliformes, corporis dimidio longiores; articuli 1°. ad 3^{um}. flavi; 3°. ad 8^{um}. curtantes et dilatantes; 9°. ad 11^{um}. lati, subæquales, clavam fingentes fusiformem non acuminatam: thorax breviter pubescens, parum convexus: abdomen ovatum, glabrum, fere planum, thorace vix longius: pedes flavi: alæ sublimpidæ, angustæ; squamulae fuscæ; nervi flavi. (Corp. long. lin. $\frac{1}{4}$; alar. lin. $\frac{1}{2}$.)

Taken by Mr. Haliday at Holywood, Ireland.

Sp. 6. Telen. Zethos. Mas et Fem. *Nigro-piceus, antennæ et pedes flava, alæ limpidæ.*

Nigro-piceus, nitens, lœvis, glaber: caput thorace paullo latius: oculi ocellique picei: antennæ corpore breviores, *mari* flavæ basi pallidiores, moniliformes; articuli 3°. ad 11^{um}. curtantes; 12^{us}. longi-conoides, acuminatus, 11°. multo longior: *fem.* pallide flavae, clavatae, submoniliformes; articuli 3°. ad 8^{um}. curtantes et dilatantes; 9^{us}. 10^{us}. et 11^{us}. lati, subæquales, clavam fingentes fusiformem non acuminatam: thorax brevi-ovatus, fere planus:

abdomen brevi-ovatum, thorace paullo angustius : oviductus flavus : pedes pallide flavi : alæ limpidæ, mediocres ; squamulæ piceæ ; nervi pallide flavi. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$.)

Reared by the Rev. Lansdown Guilding, from the eggs of a Lepidopterous insect in St. Vincent's Isle.

†† *Caput transversum.*

* *Caput thoracis latitudine* : mari antennæ submoniliformes ; articuli 3°. ad 11^{um}. curtantes ; 12^{us}. acuminatus, 11°. multo longior : fem. antennæ clavatae ; articuli 3°. ad 7^{um}. discreti, curtantes et dilatantes ; 8°. ad 11^{um}. lati, clavam fингentes fusiformem non acuminatam : mesothoracis parapsides non bene determinatae aut scuto in unum confusæ : nervus cubitalis in alæ marginem posticum directus.

‡ Fem. antennæ clavatae ; articuli 3°. ad 8^{um}. discreti.

§ *Thorax subplanus.*

Sp. 7. Telen. Phylas. Mas. *Alæ angustæ, tarsi rufo-fusci.*

Ater, nitens, lævis, gracilis : oculi ocellique picei : antennæ nigrae, graciles, corpore paullo breviores : thorax longi-ovatus, brevissime pubescens, parum convexus : abdomen planum, thoracis longitudo et forma : pedes nigro-picei ; trochanteres, genua et tarsi rufo-fusca : alæ limpidæ ; squamulæ piceæ ; nervi fusci. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Found by Mr. Haliday at Holywood, Ireland.

Sp. 8. Telen. Dorsennus. Mas. *Alæ quam præcedenti latiores, tarsi flavi.*

Ater, nitens, lævis, gracilis, glaber : oculi ocellique picei : antennæ nigro-piceæ, graciles, corpore paullo breviores : thorax longi-ovatus, parum convexus : abdomen planum, longi-ovatum, thorace vix brevius : pedes picei ; trochanteres, genua et tarsi fulva ; meso- et metatarsi basi flavi : alæ limpidæ ; squamulæ piceæ ; nervi pallide fusci. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

July; near London.

Sp. 9. Telen. Andria. Fem. *Ater, pedes rufi, femora picea, alæ limpidæ.*

Ater, obscurus, punctatus, breviter pubescens : oculi ocellique picei : antennæ nigro-piceæ, corporis dimidio vix longiores : thorax parum convexus : abdomen ovatum, nitens, læve, glabrum, thorace

longius : oviductus piceus, exertus : pedes rufi ; coxae et femora picea : alae limpidae, angustae ; squamulae piceae ; nervi fusi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Var. β.—Meso- et metatibiæ piceæ.

Taken by Mr. Haliday at Holywood, Ireland. Found near London.

Sp. 10. Telen. Tritia. Fem. *Præcedenti latior, pedes omnino rufi.*

Ater, mediocris, punctatus, obscurus, pubescens : oculi ocellique picei : antennæ nigro-piceæ, corporis dimidio multo longiores : thorax brevi-ovatus : abdomen ovatum, nitens, lave, glabrum, thoracis longitudine : pedes rufi ; coxae piceæ ; tarsi apice fusi : alae sublimpidæ, mediocres ; squamulae piceæ ; nervi fulvi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. 1.)

June ; Isle of Wight.

Sp. 11. Telen. Horus. Fem. *Ater, pedes picei, alæ fuscæ.*

Ater, nitens, lavis, gracilis : oculi ocellique picei : antennæ nigro-piceæ, corporis dimidio longiores : thorax brevissime pubescens, parum convexus : abdomen ovatum, glabrum, fere planum, thorace longius : pedes picei ; trochanteres, genua et tarsi flava, hi apice picei : alæ fuscæ, angustæ ; squamulae piceæ ; nervi fusi. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

September ; North Wales.

Sp. 12. Telen. brachialis, (Haliday, Ent. Mag. I. 271.)

Fem. *T. Horo brevior et latior, alæ quoque latiores.* (Pl. XIII. fig. 1.)

Ater, nitens, lavis : caput thorace paullo latius : oculi ocellique picei : antennæ nigrae, robustæ, corporis dimidio longiores : thorax ovatus, breviter pubescens : abdomen ovatum, glabrum, thorace minime longius et latius ; segmentum 2^{um}. ejus dorsum fere totum occupans : oviductus fuscus : pedes nigro-picei ; trochanteres, genua et tarsi fusca : alæ subfuscæ, sat latæ ; squamulae piceæ ; nervi fusi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found by Mr. Haliday at Holywood, in Ireland. September ; North Wales.

Sp. 13. Telen. Stilpo. Fem. *T. Horo brevior, T. brachiali angustior, pedes nigro-picei, alæ subfuscæ.*

Ater, nitens, lavis, brevis, sat latus : oculi ocellique picei : antennæ

nigræ, corporis dimidio longiores : thorax ovatus, fere planus, brevissime pubescens : abdomen ovatum, planum, glabrum, apicem versus latius, thorace vix longius ; segmentum 2^{um}. ejus fere totum occupans : pedes nigro-picei ; trochanteres, genua et tarsi flava, hi apice obscuriores : proalæ subfuscæ, angustæ ; metalæ limpidæ ; squamulæ piceæ ; nervi fusci. (Corp. long. lin. $\frac{1}{4}$; alar. lin. $\frac{2}{5}$.)

Found by Mr. Haliday at Holywood. Taken near London.

§§ *Thorax convexus.*

* *Thorax lavis.*

Sp. 14. Telen. Othonia. Mas et Fem. *Ater, minimus, pedes fusci; tarsi flavi, alæ sublimpidæ.*

Ater, brevis, nitens, lævis, glaber : antennæ piceæ, *mari* corporis longitudine, *fem.* corporis dimidio longiores : oculi ocellique picei : thorax brevi-ovatus : abdomen subquadratum, thoracis longitudine, apicem versus latius : pedes fusci ; trochanteres, genua et tarsi flava, hi apice obscuriores : alæ sublimpidæ, parvæ ; squamulæ piceæ ; nervi fulvi. (Corp. long. lin. $\frac{1}{5}$ — $\frac{1}{4}$; alar. lin. $\frac{1}{3}$ — $\frac{1}{2}$.)

May and July ; near London.

Sp. 15. Telen. Vinicius. Fem. *Præcedente latior, pedes picei; alæ fuscae.*

Ater, brevis, latus, nitens, lævis, glaber : oculi ocellique picei : antennæ nigræ, corpore vix breviores : thorax rotundus, convexus : abdomen subquadratum, ad apicem latius, thorace vix longius ; segmentum 2^{um}. ejus dorsum fere totum occupans : pedes picei ; trochanteres, genua et tarsi flava, hi apice fusci : alæ fuscae ; squamulæ piceæ ; nervi fusci. (Corp. long. lin. $\frac{1}{4}$ — $\frac{1}{3}$; alar. lin. $\frac{1}{4}$ — $\frac{2}{3}$.)

September ; near London ; Isle of Wight.

** *Thorax punctatus.*

† *Pedes picei.*

Sp. 16. Telen. Cleostratus. Mas et Fem. *Ater, minimus, pedes picei, alæ sublimpidæ.*

Ater, brevis, latus, subtilissime punctatus, parum nitens, glaber : oculi ocellique picei : antennæ nigræ, graciles, *mari* corporis longitudine, *fem.* corporis dimidio longiores : thorax perconvexus, paullo longior quam latus : abdomen nitens, læve, *mari* subquadratum apicem versus latius thorace brevius et angustius, *fem.*

brevi-ovatum thorace paullo longius; segmentum 2^{um}. ejus dorsum fere totum occupans: pedes picei; trochanteres, genua et tarsi pallidiora: alæ sublimpidæ, amplæ; squamulæ piceæ; nervi fusi. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$ — $\frac{3}{4}$.)

Found near London.

Sp. 17. Telen. Ophne. Mas. *Præcedente paullo major, alæ latiores limpidae.*

Ater, brevis, latus, glaber, subtilissime punctatus, parum nitens: oculi ocellique picei: antennæ nigræ, graciles, corporis longitudo: thorax perconvexus, rotundus: abdomen nitens, læve, convexum, thorace vix longius; segmentum 2^{um}. ejus dorsum fere totum occupans: pedes fusci; trochanteres, genua et tarsi flava; protibiæ flavæ, fusco cingulatæ: alæ limpidae, latæ; squamulæ piceæ; nervi fulvi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found near London.

Sp. 18. Telen. Sitius. Fem. *Ater, præcedente major, pedes picei, alæ obscure fuscae.*

Ater, latus, brevis, parum nitens, subtilissime punctatus, pubescens: oculi ocellique picei: antennæ nigræ, corpore breviores: thorax brevi-ovatus, valde convexus: abdomen subquadratum, nitens, læve, glabrum, apice latius, thorace brevius; segmentum 2^{um}. ejus dorsum fere totum occupans: pedes picei; trochanteres, genua et tarsi pallide fusca: alæ obscure fuscae, latæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{1}{2}$; alar. lin. 1.)

May; near London.

Sp. 19. Telen. Trophonius. Fem. *Præcedentis similitudine, antennæ breviores, alæ angustiores fuscae.*

Ater, brevis, latus, subnitens, glaber, subtilissime punctatus: oculi ocellique picei: antennæ nigræ, corporis dimidio longiores: thorax rotundus, convexus; scutellum nitens, læve: abdomen nitens, læve, rotundum, thorace paullo longius et latius; segmentum 2^{um}. ejus fere totum occupans: pedes picei; trochanteres, genua et tarsi fulva, hi apice fusci: alæ fuscae; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found near London.

Sp. 20. Telen. Pilumnus. Fem. *Præcedentis statura, pedes picei, alæ limpidae.*

Ater, brevis, latus, punctatus, obscurus, brevissime pubescens : oculi ocellique picei : antennæ nigrae, corporis dimidio longiores : thorax rotundus, convexus : abdomen brevi-ovatum, nitens, laeve, glabrum, fere planum, thorace paullo longius : oviductus piceus, exsertus : pedes picei ; trochanteres, genua et tarsi fusca, hi subitus flavi : alæ limpidae ; squamulæ piceæ ; nervi fulvi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found near London.

Sp. 21. Telen. Belenus. Mas et Fem. *Præcedentibus latior et crassior, pedes picei, alæ sublimpidæ.*

Teleas phalænarum ? Nees ab Esenbeck, Hymenopt. Ichneum. affin. Monogr. II. 387.

Ater, brevis, latus, obscurus, punctatus, brevissime pubescens : caput breve, thoracis latitudine : oculi ocellique picei : antennæ nigrae, sat latæ, mari corpore breviores, fem. corporis dimidio longiores : thorax valde convexus, fere globosus : abdomen fere rotundum, subplanum, nitens, laeve, glabrum, thorace paullo angustius vix brevius ; segmenta 1^{um}. et 2^{um}. basi sulcata : pedes picei, robusti ; trochanteres, genua et tarsi rufa ; protibiae rufæ, piceo cingulatæ ; tarsi apice fusi : alæ sublimpidæ, latæ ; squamulæ piceæ ; nervi fusi ; cubitalis longior et radiali angulum minus acutum quam hujus generis speciebus plerisque fingens. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Found by the Comte de Castelneau, under leaves of oak trees at Paris. September; Devonshire. Found by Mr. Davis.

— *Pedes flavi.*

Sp. 22. Telen. Alcon. Mas. *Ater, pedes rufi, alæ sublimpidæ.*

Teleas Linnei ? Nees ab Esenbeck, Hymenopt. Ichneum. affin. Monogr. II. 288.

Ater, brevis, latus, punctatus, obscurus, brevissime pubescens : caput breve : oculi ocellique picei : antennæ nigro-piceæ, graciles, corpore breviores : thorax valde convexus, fere globosus ; scutellum nitens, laeve, glabrum : abdomen subplanum, fere rotundum, nitens, laeve, glabrum, thorace paullo angustius vix brevius ;

segmenta 1^{um}. omnino 2^{um}. que basi sulcata: pedes rufi; coxae piceæ: alæ sublimpidæ, latæ; squamulæ piceæ; nervi fulvi. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1 $\frac{1}{2}$.)

Found under bark of elms at Paris, by the Comte de Castelnau, who also has reared it from the eggs of a *Pentatoma*.

Sp. 23. Telen. Turesis. Mas et Fem. *Præcedentis dimidii magnitudine, alæ angustiores.*

Teleas pumilio? *Nees ab Esenbeck, Hymenopt. Ichneum. affin. Monogr. II. 288.*

Ater, brevis, latus, subnitens, subtilissime punctatus, pubescens: oculi ocellique picei: antennæ nigro-piceæ, mari corpore paullo breviores, fem. corporis dimidio longiores; articulus 1^{us}. basi rufo-piceus: thorax valde convexus, fere rotundus: scutellum nitens, læve, glabrum: abdomen nitens, læve, glabrum, thorace vix longius, apicem versus latius; segmenta 1^{um}. omnino 2^{um}. que basi sulcata, hoc abdominis dorsum fere totum occupans: oviductus fulvus: pedes rufi; meso- et metatarsi pallidiores, apice fuscæ; coxae piceæ: alæ fulvo-limpidæ; squamulæ rufo-piceæ; nervi fulvi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

September; near London; Cumberland.

†† Fem. *antennæ capitatae; articuli 3^o. ad 8^{um}. approximati.*

Sp. 24. Telen. Colotes. Fem. *Ater, pedes rufi, alæ subfuscæ.*

Ater, latus, brevis, parum nitens, subtilissime punctatus, pubescens: oculi ocellique picei: antennæ fuscæ, corporis dimidio longiores; articuli 1^{us}. et 2^{us}. flavi; clava picea: thorax subrotundus, convexus: abdomen subquadratum, nitens, læve, glabrum, thoracis longitudine, apicem versus latius; segmentum 2^{um}. ejus dorsum fere totum occupans: pedes rufi; tarsi pallidiores, apice fuscæ; coxae piceæ: alæ subfuscæ, angustæ; squamulæ piceæ; nervi fulvi. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$.)

June; near London.

Sp. 25. Telen. Nauplius. Fem. *Ater, antennæ quam præcedenti crassiores, pedes rufi, alæ limpidae, nervus cubitalis brevis.*

Ater, brevis, latus, obscurus, punctatus, brevissime pubescens: oculi ocellique picei: antennæ nigræ, validæ, corporis dimidio

vix longiores; articulus 1^{us}. basi fulvus: thorax convexus, fere rotundus: postscutellum prominens: abdomen brevi-ovatum, glabrum, subtilissime punctatum, thorace paullo longius: pedes rufi; trochanteres piceæ; tarsi apice fusci: alæ fuscae, breves; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{1}{4}$ — $\frac{1}{3}$; alar. lin. $\frac{1}{3}$ — $\frac{1}{2}$.)

Found near London; and in Lanarkshire, Scotland.

Sp. 26. Telen. ? *Aethra*. Fem. *Ater, pedes nigro-picei, tarsi rufi, alæ fuscae.*

Obs.—Teleadi propius accedere videtur, nervo cubitali longiore tantum discrepans.

Ater, brevis, latus, crassus, nitens, subtilissime punctatus, pubescens: *Teleadis* similitudine: oculi ocellique picei: antennæ nigræ, robustæ corporis dimidio vix longiores; articulus 1^{us}. basi fulvus: thorax rotundus, convexus: mesothoracis parapsidum suturæ conspicuae; postscutellum spinam brevem validam emittens: abdomen fere rotundum, thorace paullo longius et latius; segmenta 1^{um}. omnino 2^{um}. que basi sulcata; 3^{um}. longius: pedes nigro-picei, validi; trochanteres, genua et tarsi rufa, hi apice fusci: alæ fuscae, breves, angustæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{2}{3}$.)

Found near London. Taken by Mr. Davis.

GEN. IV.—THORON.—*Haliday.*

Caput transversum, thoracis latitudine: mandibulæ subquadratae, tridentatae, longitudine mediocres; una dentibus aequalibus, altera dentibus medio et interno minimis: maxillæ latæ, truncatae, subtrigonæ, intus apice lobo brevi terminatae; palpi 4-articulatae, moniliformes, extrorsum crassiores; articulus 1^{us}. longi-cyathiformis, mediocris; 2^{us}. et 3^{us}. breviores; 4^{us}. fusiformis, acuminatus, 1^o. paullo longior et latior: labium obconicum, mediocre; ligula non conspicua; palpi biarticulati, brevissimi, articulus 2^{us}. minimus: *mari* antennæ 12-articulatae, moniliformes; radiculus longissimus; articulus 1^{us}. longus; 2^{us}. cyathiformis; 3^{us}. et sequentes ad 11^{um}. ovati; 12^{us}. fusiformis, 11^o. longior: *fem.* antennæ capitatae; articuli 3^o. ad 7^{um}. curtantes, vix dilatantes; clava 5-articulata, longi-ovata, magna, solida: prothorax supra vix conspicuus: mesothoracis parapsidum suturæ postice vix mutuo accedentes; postscutellum tuberculo simile, non acuminatum: metathorax mediocris, utrinque spinosus: abdomen

longi-ovatum, petiolatum; segmentum 1^{um}. angustum; 2^{um}. longius; 3^{um}. adhuc longius; 4^{um}. et sequentia brevia: segmenta ventralia 1^{um}. et 2^{um}. maxima; sequentia brevissima: pedes longi, graciles: alæ pubescentes, ciliatæ; nervus costalis alæ dimidio vix longior, ramulum emittens in alæ disco oblique descendenter et mox stigmate calloso terminatus: metalæ nervus unicus costalis simplex.

Sp. 1. Thor. metallicus. Mas et Fem. *Nigro-aeneus, antennæ nigræ, pedes rufo-picei, alæ fuscæ.* (Pl. XIII. fig. 11. fem. fig. 12. antenna mas.)

Teleas metallicus . . . Haliday, Curtis, Brit. Ent. VII. 333.

Thoron metallicus . . . Haliday, Ent. Mag. I. 272.

Teleas fornicatus, mas. Nees ab Esenbeck, Hymenopt. Ichneum. affin. Monogr. II. 292.

Teleas solidus, fem. . . —————— 290.

Nigro-aeneus, convexus, nitens, lœvis, pilis albis parce hirtus: oculi ocellique picei: antennæ nigræ, mari corporis longitudine: *fem.* corporis dimidio paullo longiores; articulus 1^{us}. basi et radiculus rufi: thorax brevi-ovatus, crassus: mesothoracis parapsidum suturæ bene determinatae: metathorax punctatus, obscurus: abdomen *mari* thorace multo longius, *fem.* acutius thorace plus duplo longius; segmenta 1^{um}. omnino 2^{um}. que basi ad medium sulcata: pedes rufo-picei; coxae nigro-piceæ; trochanteres, femora apice et subtus protibiæque rufa: alæ fuscæ, mediocres; squamulæ piceæ; nervi obscure fusi. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 2.)

Var. β.—Meso- et metapedum femora et tibiæ omnino rufa.

Near London; from March to October; at the roots of grass, moss, &c.; by the edges of brooks and ponds; Devonshire. Found by Mr. Haliday at the edges of ponds, among roots of aquatic plants, and on the water, at Holywood, Ireland. The female is much more abundant than the male.

GEN. V.—XENOMERUS.^a

Mas.—Antennæ 12-articulatæ, verticillato-pilosæ, moniliformes; articulus 1^{us}. longus, gracilis; 2^{us}. brevi-cyathiformis; 3^{us}. et sequentes ad 11^{um}. ovati, discreti, subæquales; 12^{us}. teliformis,

^a Ξένος, alienus, μέρος, pars.

acuminatus, 11^o. longior : abdominis segmenta 1^{um}. et 2^{um}. subæqualia ; 3^{um}. magnum ; sequentia brevia : alæ nervus cubitalis brevis, e costæ medio in discum fere recte descendens.

Sp. I. Xen. Ergenna. Mas. *Ater, antennæ nigro-piceæ, pedes picei, alæ limpidae.* (Pl. XIII. fig. 10.)

Ater, brevis, latus, nitens, laevis, glaber : caput thorace vix latius : oculi ocellique picei : antennæ nigro-piceæ, graciles, corpore multo longiores : thorax brevi-ovatus, convexus : prothorax supra non conspicuus : mesothoracis parapsidum suturæ distinctæ : metathorax brevis : abdomen subrotundum, fere planum, thorace paullo brevius : pedes picei, longi, graciles ; trochanteres, genua et tarsi pallidiora : alæ limpidae, angustæ, corpore longiores ; squamulæ piceæ ; nervi fusci. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $1\frac{1}{2}$.)

July ; on windows ; near London.

GEN. VI.—TELEAS.—*Latreille.*

Corpus compactum, convexum, pilis albidois hirtum : caput mediocre, transversum, subquadratum, thoracis vix latitudine : mandibulæ longæ, subquadratae, tridentatae, paulo arcuatae, basi intus dilatatae ; dentes acuti, externus mediocris, internus minor, medius adhuc minor : maxillæ latæ, subtrigonæ, intus apice lobo brevi terminatae ; palpi triarticulati, graciles, filiformes ; articulus 1^{us}. mediocris ; 2^{us}. brevior ; 3^{us}. acuminatus, 1ⁱ. et 2ⁱ. longitudine : labium obconicum, mediocre ; ligula non conspicua ; palpi unarticulati, brevissimi : antennæ 12-articulatae, pubescentes, basi pedicello unico ortæ : *mari* antennæ filiformes aut moniliformes ; articulus 1^{us}. longus, minime arcuatus ; 2^{us}. brevissimus ; 3^{us}. 1^o. brevior ; 4^{us}. et sequentes ad 11^{um}. longitudine decrescentes ; 12^{us}. acuminatus, 11^o. paullo longior : *fem.* antennæ plus minusve clavatae ; articulus 1^{us}. longissimus, subarcuatus ; 2^{us}. longicyathiformis, gracilis ; 3^{us}. et 4^{us}. longiores, subæquales ; 5^{us}. et 6^{us}. minuti ; 7^{us}. et sequentes ad 12^{um}. latiores, breves, clavam fingentes fusiformem : oculi mediocres, laterales, vix prominentes : ocelli 3, vertice triangulo instructi : thorax brevi-ovatus : prothorax brevissimus, supra vix conspicuus : mesothorax maximus ; scutum et scutellum magna, hoc semicirculum fingens, ejus parapsides vix conspicuae ; post scutellum spinam emittens brevem validam arcuatam : metathorax mediocris, scaber, utrinque bispinosus : abdomen fere planum, ovatum aut subfusiforme, thorace plerunque longius ; segmenta 6 dorsalia et totidem ventralia

conspicua, quorum 1^{um}. angustum, 2^{um}. longius, 3^{um}. adhuc longius, 4^{um}. 5^{um}. et 6^{um}. parva: pedes pubescentes; coxae et trochanteres parva; protarsi breves articulo 1°. validiore subarcuato: articuli 1°. ad 4^{um}. longitudine decrescentes, 5^{us}. 4°. paullo longior; unguis et pulvilli minuti: alæ angustæ, subtilissime pubescentes, iridescentes, cuique nervus costalis unicus, alæ triente brevior, apice ramulum emittens brevem stigmate terminatum minimo: metalæ nervo unico simplici, dimidiis longitudine.

* *Alæ perfectæ.*

† *Antennæ filiformes; articuli lineares.*

Sp. 1. Tel. varicornis (Latreille? MSS.) Fem. *Ater, antennæ albo cingulatæ, pedes rufi, alæ fuscæ.* (Pl. XIII. fig. 7.)

Ater, scaber, obscurus, pubescens, parum convexus: caput thoracis latitudine: oculi ocellique picei: antennæ nigræ, subfiliformes, extrorsum crassiores, capitibus thoracisque longitudine; articulus 1^{us}. basi piceus; 3^{us}. et sequentes ad 6^{um}. albi; 12^{us}. acuminatus, gracilior, flagellum longi-fusiforme: thorax ovatus: abdomen longi-ovatum, subnitens, subtilissime punctatum, fere glabrum, basi scitissime sulcatum, thorace fere duplo longius: pedes rufi; coxae nigro-piceæ: proalæ fumosæ; metalæ pallidiores; squamulæ piceæ; nervi fusci. (Corp. long. lin. 2 $\frac{1}{2}$; alar. lin. 3 $\frac{1}{2}$.)

Described from a French specimen in the British Museum, named "*Acanthophora varicornis*" by Latreille? Those taken by Mr. Haliday in sand-pits, Kent, and at Holywood, Ireland, are much smaller, and their antennæ are banded with red.

Sp. 2. Tel. Metabus. Mas. *Ater, genua rufa, alæ subfuscæ, abdomen thorace multo longius.*

Ater, punctatus, parum nitens: caput transverse undatim sulcatum: oculi ocellique picei: antennæ corpore longiores: thorax brevi-ovatus, confertim punctatus: abdomen subfusiforme, thoracis latitudine at multo longius, sulcatum, ad suturas lœve, apicem versus dense hirtum; segmentum 1^{um}. profunde et confertim sulcatum; 2^{um}. sulcis postice evanescentibus; 3^{um}. sulcis ad huc levioribus: pedes nigri; genua, trochanteres necnon tibiæ basi et apice rufa: alæ longitudine mediocri: proalæ subfuscæ;

metalæ sublimpidæ; nervi fuscæ; squamulæ piceæ. (Corp. long. lin. 2; alar. lin. 3.)

May; near London.

Sp. 3. Tel. elatior. Mas et Fem. *Præcedentis structura at lævior glabrior nitentior, mari abdomen thorace paulo longius.*

Teleas elatior . . . Haliday, *Curtis, Brit. Ent.* VII. 333.
Prosacantha spinosula? Nees ab Esenbeck, *Hymenopt. Ichn. affin. Monog.* II. 296.

Ater, punctatus, parum nitens: caput posticum transverse undatum sulcatum: oculi ocellique picei: antennæ mari corpore longiores, fem. capite thoraceque paulo longiores: thorax brevi-ovatus, punctatus: abdomen nitens, læve, fere glabrum, mari ovatum thorace paulo longius, fem. longi-ovatum thorace multo longius; segmenta 1^{um}. et 2^{um}. ad discum 3^{um}. qui basi scite sulcata: pedes nigri; trochanteres, genua tibiæque apice et basi flava; tarsi fuscæ, articulus 1^{us}. basi flavus: alæ longitudine mediocri, sublimpidæ; squamulæ piceæ; nervi fuscæ. (Corp. long. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$; alar. lin. 2 $\frac{1}{3}$ —2 $\frac{2}{3}$.)

Var. β.—Abdominis segmenta 4°. ad 6^{um}. punctata.

Found by Mr. Haliday, in marshes; in England, Ireland, and Scotland. Common near London. Taken near Paris, by the Comte de Castelneau.

Sp. 4. Tel. Lycaon. Mas. *Præcedenti similis at brevior, alæ quoque breviores obscuriores.*

Ater, punctatus, nitens: caput transverse undatum sulcatum: oculi ocellique picei: antennæ corpore longiores: thorax brevi-ovatus, punctatus: abdomen ovatum, nitens, læve, fere glabrum, thorace paulo longius; segmenta 1^{um}. et 2^{um}. ad discum 3^{um}. que basi scite sulcata: pedes nigro-picei; coxae nigræ; trochanteres necnon femora tibiæque apice rufa; tarsi rufo-picei: alæ fuscæ; nervi obscuriores; squamulæ piceæ. (Corp. long. lin. 1—1 $\frac{1}{3}$; alar. lin. 2—2 $\frac{1}{2}$.)

Var. β.—Abdominis sulci segmenti 3ⁱⁱ. fere apicem attingentes.

Var. γ.—Minor, alæ subfuscæ.

September; near London, Devonshire, and Lanarkshire.

Sp. 5. Tel. Therycides. Mas et Fem. *Præcedenti similis, antennæ graciliores, alæ angustiores.*

Mas.—Ater, subnitens, subtilissime punctatus, fere glaber: oculi ocellique picei: antennæ corpore longiores, thorax brevi-ovatus: abdomen ovatum, thorace paullo longius; segmenta 1^{um}. et 2^{um}. scite et profunde sulcata: pedes picei; coxæ nigræ; trochanteres et genua rufa; meso- et metatarsi rufo-picei, basi rufi: proalæ subfuscæ; metalæ sublimpidæ; squamulæ piceæ; nervi fusci.

Fem.—*Mari similis*: antennæ corporis dimidio longiores: thorax punctatus, obscurus: abdomen longi-ovatum, thorace multo longius; segmentum 3^{um}. basi sulcatum: pedes nigro-picei; coxæ nigræ; trochanteres genua et tarsi rufa. (Corp. long. lin. 1—1½; alar. lin. 1¾—2½.)

Var. β.—*Mas*, pedes nigro-picei; trochanteres, genua et tarsi pallidiora: alæ fuscæ.

Taken at Holywood, Ireland, by Mr. Haliday; and at Paris, by the Comte de Castlneau. September; near London, North Wales, Isle of Wight, and Lanarkshire. July; Forest of Fontainbleau.

Sp. 6. Tel. Cephisus. Mas. *Præcedente paullo latior, antennæ breviores.*

Ater, subnitens, subtilissime punctatus, fere glaber: oculi ocellique picei: antennæ corpore longiores: thorax brevi-ovatus: abdomen ovatum, thorace paullo longius; segmenta 1^{um}. et 2^{um}. scite et profunde sulcata: pedes rufi; coxæ nigræ; femora et tibiæ picea, basi et apice rufa; tarsi apice picei: alæ albidæ, apud costam fuscantes; squamulæ piceæ; nervi fusci. (Corp. long. lin. 1½; alar. lin. 2.)

June; Windsor Forest.

Sp. 7. Tel. Galba. Mas. T. Cephiso *simillimus, antennæ crassiores.*

Ater, rugoso-punctatus, pubescens, obscurus: oculi ocellique picei: antennæ corpore longiores: thorax ovatus: abdomen longi-ovatum, nitens, lœve, glabrum, apice pubescens; segmenta 1^{um}. omnino 2^{um}. que basi scite sulcata: pedes picei; trochanteres et genua rufa: alæ subfuscæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. 1½; alar. lin. 2.)

May; near London.

Sp. 8. Tel. Aratus. Mas. T. Therycidi *similis*, *alæ angustiores obscuriores*.

Ater, subnitens, subtilissime punctatus, fere glaber : oculi ocellique picei : antennæ corpore longiores : thorax brevi-ovatus : abdomen ovatum, thorace paullo longius ; segmenta 1^{um}. et 2^{um}. scite et profunde sulcata : sexualia pallida : pedes nigri ; genua rufa ; trochanteres et tarsi picei : alæ obscure fuscae, angustæ ; nervi picei. (Corp. long. lin. 1 ; alar. lin. 1 $\frac{5}{4}$.)

September ; near London ; North Wales. Found by Mr. Haliday at Holywood, Ireland.

Sp. 9. Tel. Doto. Mas et Fem. *Ater, pedes rufi, mari femora piceo cingulata, alæ fuscae*.

Mas.—Ater, obscurus, punctatus, pubescens : oculi ocellique picei : antennæ nigræ, corpore longiores : thorax brevi-ovatus ; scutellum læve, nitens : abdomen ovatum, læve, nitens, parce pubescens, thorace paullo longius ; segmenta 1^{um}. et 2^{um}. scite sulcata : pedes rufi ; femora et mesotibiæ piceo cingulata ; tarsi apice picei : proalæ fuscae ; metalæ pallidiores ; squamulæ piceæ ; nervi fusci.

Fem.—Antennæ capite thoraceque longiores : pedes omnino rufi. (Corp. long. lin. $\frac{2}{3}$ —1 $\frac{1}{2}$; alar. lin. 1—1 $\frac{2}{3}$.)

July, October ; near London. Found by Mr. Haliday at Holywood, Ireland.

Sp. 10. Tel. Glaucus. Fem. *Præcedenti similis, antennæ graciliores, alæ latiores limpidae*.

Ater, subtilissime punctatus, pubescens, parum nitens : oculi ocellique picei : antennæ nigræ, corporis dimidio longiores : thorax brevi-ovatus : abdomen ovatum, nitens, læve, fere glabrum, thorace latius et multo longius ; segmenta 1^{um}. omnino 2^{um}. que basi ad medium scite sulcata : pedes picei ; trochanteres, genua et tarsi rufi, hi apice obscuriores : alæ limpidae ; squamulæ piceæ ; nervi fusci. (Corp. long. lin. $\frac{4}{5}$; alar. lin. 1 $\frac{1}{2}$.)

Found near London.

Sp. 11. Tel. ephippium. (Haliday, Curtis, Brit. Ent. VII. 333.) Mas. *Rufus, caput antennæ et abdomen nigro-picea*.

Rufus, lævis, nitens, pubescens : caput nigro-piceum : oculi ocellique picei : antennæ nigro-piceæ, corpore dimidio longiores ;

articulus 1^{us}. rufus; 2^{us}. rufo-piceus: thoracis discus rufo-piceus: abdomen nigro-piceum, ovatum, thorace longius; segmenta 1^{um}. omnino 2^{um}. que basi rufa, sulcata: pedes rufi; protarsi obscuriores; meso- et metatarsi apice picei: alæ corpore longiores, angustæ, fulvescentes; nervi concolores. (Corp. long. lin. $\frac{2}{3}$ — $\frac{5}{4}$; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Taken by Mr. Haliday, on grass under trees, at Holywood. July; near London.

Sp. 12. Tel. flavipes. (Haliday, Curtis, Brit. Ent. VII. 333.) Mas. *Nigro-piceus*, T. ephippii *similitudine at minor*.

Nigro-piceus, subtilissime punctatus, nitens, pubescens: oculi ocellique picei: antennæ nigro-piceæ, corpore dimidio longiores; articuli 1^{us}. et 2^{us}. flavi: abdomen ovatum, thorace paullo longius et latius; segmenta 1^{um}. et 2^{um}. omnino 3^{um}. que basi sulcata: pedes flavi; tarsi obscuriores: alæ fulvo-limpidæ, angustæ, corpore longiores; nervi fulvi. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{3}{4}$ —1.)

Taken by Mr. Haliday, on grass under trees, at Holywood. September; near London. Isle of Wight.

Sp. 13. Tel. Mermerus. Mas et Fem. T. Arato *et præcedentibus minor et brevior*.

Ater, parum nitens, punctatus, pubescens: caput fere læve: oculi ocellique picei: antennæ nigræ; *mari* corpore dimidio longiores, articulus 1^{us}. piceus basi pallidior; *fem.* corporis dimidio longiores, articulus 1^{us}. basi piceus thorax fere rotundus: abdomen læve, nitens, disco glabrum, thorace paullo longius et latius, *mari* brevi-ovatum basi nigro-piceum, *fem.* ovatum; segmenta 1^{um}. et 2^{um}. sulcata: pedes *mari* picei, tarsi tibiæque basi genua et trochanteres pallidiora; *fem.* nigri, trochanteres et genua rufa, tarsi picei basi rufi: proalæ fuscae; metalæ pallidiores; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. 1— $1\frac{1}{4}$.)

Var. β.—*Mas*, abdominis segmentum 3^{um}. basi sulcatum.

Var. γ.—*Fem.* minor: alæ obscuriores angustiores.

Common during the summer and autumn, on grass in fields, lime trees, &c. near London; the female inhabits moss in winter. Isle of Wight; North Wales; Devonshire. Forest of Fontainbleau. Found in Lincolnshire by Mr. Davis, and at Holywood, Ireland, by Mr. Haliday.

Sp. 14. Tel. Chesias. Mas. T. Mermero *similis*, *antennæ multo breviores*.

Ater, punctatus, pubescens, parum nitens: oculi ocellique picei: antennæ nigræ, corpore paullo longiores: thorax brevi-ovatus: abdomen ovatum, nitens, lœve, disco fere glabrum; segmenta 1^{um}. omnino 2^{um}. que basi sulcata: pedes nigri, genua rufa; tarsi picei, basi et subtus pallidiores: alæ fuscæ, angustæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1 $\frac{1}{4}$.)

September; near Keswick, Cumberland.

Fem.?—*T. Mermero gracilior*.

Antennæ capitis thoracisque longitudine: abdomen longi-ovatum, disco glabrum; segmentum 1^{um}. confertim sulcatum; 2^{um}. et 3^{um}. basi scite sulcata: genua et tarsi picea. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1 $\frac{1}{4}$.)

Found near London.

Sp. 15. Tel. Xenetus. Fem. T. Mermero *minor brevior*, *alæ limpidiores*.

Ater, pubescens, subtilissime punctatus, parum nitens: oculi ocellique picei; antennæ nigræ, corporis dimidio longiores; articulus 1^{us}. basi piceus: thorax fere rotundus: abdomen nitens, lœve, fere glabrum, ovatum, segmenta 1^{um}. omnino, 2^{um}. basi fere ad apicem 3^{um}. que basi sulcata: pedes picei; trochanteres et genua rufa; tarsi rufo-picei, basi et subtus pallidiores: alæ sublimpidæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Var. ♂.—Abdominis segmentum 3^{um}. fere ad apicem scitissime sulcatum.

From May to September; on grass in fields, windows, &c.; near London; Hampshire; Cumberland; Cornwall. Found at Epping by Mr. Doubleday.

Sp. 16. Tel. Paula. Fem. *Præcedente minor*, *alæ et pedes obscuriora*.

Ater, parum nitens, punctatus, pubescens: oculi ocellique picei: antennæ nigræ, corporis dimidio longiores; articulus 1^{us}. basi piceus: thorax fere rotundus: abdomen ovatum, nitens, lœve, disco glabrum; segmenta 1^{um}. omnino 2^{um}. que fere ad apicem sulcata, hoc parvum; 3^{um}. maximum, basi et nonnunquam fere ad apicem scitissime sulcatum: pedes nigri; trochanteres et genua

rufa; tarsi picci, basi rufi: alæ fuscæ; nervi picei. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{2}{3}$.)

April, September; near London; Devonshire; North Wales; Isle of Wight. Found by Mr. Haliday at Holywood, Ireland.

Sp. 17. Tel. Chyllene. Fem. T. Paula *similis*, *alæ angustiores*.

Ater, punctatus, obscurus, fere glaber: oculi ocellique picei: antennæ corporis dimidio longiores: thorax brevi-ovatus: abdomen brevi-ovatum, nitens, læve, glabrum, thorace longius et latius; segmenta 1^{um}. omnino, 2^{um}. basi ad medium 3^{um}. que basi sulcata: oviductus pallidus: pedes nigro-picei; trochanteres, genua et tarsi pallidiora: alæ fuscæ, angustæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{2}{3}$.)

September, October; near London; Isle of Wight; North Wales; Cumberland; Lanarkshire,

Sp. 18. Tel. Agle. Mas et Fem. T. Xeneto *similis*, *minor*, *gracilior*, *alæ angustiores*.

Ater, pubescens, subtilissime punctatus, parum nitens: oculi ocellique picei: antennæ nigrae, *mari* corpore multo longiores, *fem.* corporis dimidio longiores: thorax fere rotundus: abdomen brevi-ovatum, nitens, læve, fere glabrum, *fem.* thorace longius et latius; segmenta 1^{um}. omnino necnon 2^{um}. et *fem.* 3^{um}. quoque basi scite sulcata: pedes nigro-picei, trochanteres et genua rufa; tarsi rufo-picei, basi et subtus pallidiores: alæ sublimpidæ, angustæ, squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{2}{3}$ — $\frac{3}{4}$.)

Near London. Found also by Mr. Haliday at Holywood, Ireland; and by Mr. Davis.

Sp. 19. Tel. Bassus. Fem. *Præcedente latior brevior*, *pedes rufi*.

Ater, obscurus, punctatus, pubescens: oculi ocellique picei: antennæ nigrae, corporis dimidio longiores; articulus 1^{us}. piceus, basi pallidior: thorax fere rotundus: abdomen ovatum, nitens, læve, parce pubescens, basi sulcatum: pedes rufi; femora obscuriora: alæ sublimpidæ, angustæ, breves; nervi picei. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$.)

July; near London.

Sp. 20. Tel. Asramanes. Fem. *Ater, præcedentibus brevior, pedes nigro picei, alæ fuscæ.*

Ater, brevis, latus, parum nitens, punctatus, fere glaber : oculi ocellique picei : antennæ nigræ, corporis dimidio longiores : thorax rotundus : abdomen nitens, subtilissime punctatum, glabrum, rotundum, thorace paullo longius et latius ; segmenta 1^{um}. omnino 2^{um}. que basi sulcata : pedes nigro-picei ; trochanteres, genua et tarsi pallidiora : alæ fuscæ, angustæ ; squamulæ piceæ ; nervi fusi. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$.)

Found near London.

Sp. 21. Tel. Medon. Fem. *Præcedentis statura, alæ limpidae.*

Ater, brevis, latus, nitens, lævis, glaber : oculi ocellique picei : antennæ nigro-piceæ, corpore paullo breviores : thorax rotundus ; mesothoracis parapsidum suturæ conspicuae ; spina brevis : abdomen rotundum, thorace paullo latius : pedes picei ; trochanteres, genua et tarsi pallidiora ; alæ limpidae, angustæ ; squamulæ piceæ ; nervi fulvi. (Corp. long. lin. $\frac{1}{4}$; alar. lin. $\frac{1}{3}$.)

October ; near London.

†† *Antennæ mari moniliformes ; articuli ovati.*

Sp. 22. Tel. clavicornis. Mas et Fem. *Ater, femora incrassata, tibiae subclavatae, tarsi breves lati, alæ fuscæ.*
(Plate XIII. fig. 8, Fem. ; fig. 9, antenna Mas.)

Scelio brevicornis . . *Latr. Hist. Nat. des Crust. et des Insect.* XIII. 227.

Scelio longicornis . . *Latr. Gén. Crust. et Insect.* I.
Tab. 12. fig. 9, 10.

Scelio rugosulus . . *Latr. Gén. Crust. et Insect.* I.
Tab. 12. fig. 11, 12.

Teleas clavicornis . . *Lat. Gén. Crust. et Insect.* IV.
33; *St. Fargeau et Serville, Encycl. Méthod.* X. 556.

Cinipsillum clavicone, *Lam. Anim. sans Vertèbres.* VI. 158.

Mas.—Ater, brevis, latus, crassus, parum nitens, punctatus, pubescens : caput nitens, fere læve : oculi ocellique picei : antennæ nigræ, corpore paullo longiores : abdomen ovatum, planum, subtilissime sulcatum, disco fere glabrum, thorace longius vix latius :

pedes nigro-picei; trochanteres et genua rufa; tarsi picei, basi et subtus rufi; metatarsis articulus 1^{us}. seorsum crassus: alæ fuscæ; nervi picci.

Fem.—Obscurus: antennis articuli 7^o. ad 12^{um}. valde approximati: pedes rufi; coxae et femora nigra; metafemora quam *mari* crassiora; tibiæ piceo cingulatae; tarsi apice picei. (Corp. long. lin. 1—1½; alar. lin. 1½—2.)

Var. β.—*Fem.* tibiæ tarsique omnino rufa.

Paris; Comte de Castelneau. Holywood; Mr. Haliday. From May to September; near London; Windsor Forest; Hampshire; Isle of Wight; Cornwall; South of France.

Sp. 23. Tel. Brasilas. Mas et Fem. *Ater, pedes rufo-picei validi, alæ fuscæ.*

Ater, obscurus, punctatus, pubescens: oculi ocellique picei: antennæ nigræ, validæ, *mari* corpore vix longiores, *fem.* corporis dimidio paulo longiores: thorax brevi-ovatus: abdomen ovatum, sulcatum, glabrum, thorace longius, ad suturas læve nitens: pedes validi, picei; trochanteres, genua et tarsi rufo-picea: alæ fuscæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. 2—1½; alar. lin. 1—1½.)

Var. β.—*Mas et Fem.* abdomen læve, nitens, basi sulcatum: trochanteres, genua et tarsi rufa.

Var. γ.—*Fem.* pedes rufo-picei; trochanteres, genua et tarsi rufa.

September; near London; North Wales; Isle of Wight. July; south of France.

Sp. 24. Tel. Ocyroe. Mas. *Ater, pedes nigro-picei graciles, alæ subfuscæ.*

Ater, nitens, subtilissime punctatus, pubescens: oculi ocellique picei: antennæ corpore vix longiores: thoracis spina dorsalis brevis, recta: abdomen ovatum, læve, fere glabrum, thorace dimidio longius; segmenta 1^{um}. et 2^{um}. profunde et confertim sulcata; 3^{um}. basi subtilissime sulcatum: pedes nigri; trochanteres et genua rufa; tarsi picei, basi rufi: alæ subfuscæ, mediocres; nervi fusci. (Corp. long. lin. 1; alar. lin. 1½.)

From June to September; near London; Isle of Wight. Epping, Mr. Doubleday; Paris, Comte de Castelneau.

Sp. 25. Tel. Smerdis. Mas. *Præcedentis dimidii magnitudine.*

Ater, subnitens, parum punctatus, pubescens : oculi ocellique picei : antennæ nigræ, moniliformes, corpore paullo longiores : thorax brevi-ovatus : abdomen ovatum, nitens, læve, glabrum, apice parce pubescens ; segmenta 1^{um}. omnino 2^{um}. que basi scite sulcata : pedes picei ; genua pallidiora ; trochanteres flavi : alæ subfuscæ ; nervi picei. (Corp. long. lin. $\frac{1}{2}$ — $\frac{1}{2}$; alar. lin. $\frac{2}{3}$ — $\frac{5}{4}$.)

Var. β.—Minor : abdomen basi piceum.

May to July ; near London ; Fontainbleau.

** *Alæ truncatæ aut nullæ.*

Sp. 26. Tel. Lamus. Fem. *Ater, abdomen piceum, pedes flavi, alæ sublimpidæ breves.*

Ater, pubescens, punctatus, parum nitens : oculi ocellique picei : antennæ fulvæ ; articulus 1^{us}. basi flavus ; clava picea : thorax fere rotundus ; spina minima : abdomen piceum, nitens, læve, glabrum, thorace paullo longius et latius, basi fulvum : pedes flavi : alæ sublimpidæ, breves, angustæ ; nervi picei. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{3}$.)

Taken by Mr. Haliday, on grass under trees, at Holywood, Ireland.

Sp. 27. Tel. apricans. (Haliday, Curtis, Brit. Ent. VII. 333.) Fem. *Ater, pedes picei, tarsi rufi, alæ fuscæ vix thoracis longitudine.*

Ater, punctatus, obscurus, pubescens : caput nitens, sublæve : oculi ocellique picei : antennæ nigræ, corporis dimidio paullo longiores : thorax brevi-ovatus : abdomen ovatum, nitens, læve, glabrum, thorace paullo longius et latius ; segmenta 1^{um}. omnino 2^{um}. que basi sulcata : pedes nigro-picei ; tibiæ pallidiores ; trochanteres, genua et tarsi rufa, hi apice fuscæ : alæ fuscæ, angustæ perbreves, vix thoracis longitudine ; squamulæ piceæ ; nervi fuscæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $\frac{1}{2}$.)

Taken by Mr. Haliday, on sandy banks, at Holywood, Ireland.

Sp. 28. Tel. Procris. Mas. *Ater, apterus, antennæ mari filiformes, pedes picei.*

Ater, punctatus, brevissime pubescens, parum nitens : caput thoracis latitudine : oculi ocellique picei : antennæ filiformes, corpore

dimidio longiores; articulus 1^{us}. basi piceus: thorax brevi-ovatus: abdomen ovatum, nitens, subtilissime punctatum, fere glabrum, thorace paullo longius et latius; segmenta 1^{um}. omnino 2^{um}. que fere ad apicem sulcata: pedes picei; trochanteres, genua et tarsi rufo-picea. (Corp. long. lin. $\frac{1}{3}$ — $\frac{2}{3}$.)

Var. β.—Pedes nigri; trochanteres, genua et tarsi picea.

Var. γ.—Trochanteres, genua et tarsi rufa, hi apice picei.

Common on grass in fields, near London, during the summer and autumn; Isle of Wight. Found by Mr. Haliday at Holywood, Ireland.

Sp. 29. Tel. Timareta. Mas et Fem. *Ater, antennæ mari moniliformes, alæ vix conspicuae.*

Mas.—Ater, punctatus, pubescens, parum nitens: oculi ocellique picei: antennæ nigræ, moniliformes, corpore longiores: thorax brevi-ovatus: abdomen ovatum, nitens, lœve, fere glabrum; segmenta 1^{um}. omnino 2^{um}. que basi sulcata: pedes nigri; trochanteres et genua rufo-picea aut picea; tarsi picei aut nigro-picei: alæ vix conspicuae.

Fem.—Antennæ corporis dimidio longiores, quam *fem.* sectionis 1ⁱ. plus clavatae; articuli 3^{us}. et 4^{us}. breviores. (Corp. long. lin. $\frac{1}{5}$ — $\frac{2}{3}$.)

September; near London, Isle of Wight, Devonshire, and Lanarkshire. July; South of France. Found by Mr. Haliday at Holywood, Ireland; and by Mr. Doubleday at Epping.

Sp. 30. Tel. pulex. Fem. (Haliday, Curtis, Brit. Ent. VII. 333.) *Præcedentis dimidii magnitudine aut minor.*

Ater, brevis, punctatus, obscurus, pubescens, minimus: caput thorace paullo latius: oculi ocellique picei: antennæ nigræ, validæ, corpore paullo breviores: thorax rotundus: abdomen lœve, nitens, glabrum, rotundum, thorace paullo longius et latius: pedes picei; genua et tarsi flava: alæ nullæ. (Corp. long. lin. $\frac{1}{5}$ — $\frac{4}{5}$.)

Found by Mr. Haliday, at Holywood, Ireland.

GEN. VII.—SCELIO.—*Latreille.*

Caput subquadratum, thorace vix latius: mandibulæ longæ, arcuatæ, apice bidentatae; dentes acuti, subæquales: maxillæ breves,

latæ, subtrigonæ, intus apice lobo brevi lato terminatæ; palpi 3-articulati, filiformes, graciles; articulus 1^{us}. mediocris, 2^{us}. brevis, 3^{us}. fusiformis 1^{l.} et 2^{l.} longitudine: labium obconicum, sat longum; ligula brevis, minima; palpi 3-articulati, mediocres; articulus 2^{us}. brevissimus, 3^{us}. fusiformis 1^{o.} paullo longior: mari antennæ 10-articulatæ, moniliformes, longi-fusiformes; articulus 1^{us}. flagelli fere dimidii longitudine; 2^{us}. cyathiformis; 3^{us}. et sequentes ad 9^{um}. subæquales, approximati, breves, fere rotundi; 10^{us}. conoides, 9^{o.} longior et angustior: fem. antennæ 12-articulatæ, fusiformes, quam mari crassiores; articuli 2^{us}. et 3^{us}. cyathiformes, hic brevior; 4^{us}. et 5^{us}. brevissimi; 6^{us}. et sequentes ad 12^{um}. breves, approximati, subæquales, clavam fusiformem fingentes: prothorax brevis: mesothoracis scutellum semicirculum fingens: metathorax mediocris: abdomen thorace multo longius; segmenta 6 dorsalia et totidem ventralia transversa subæqualia: alæ angustæ; nervus subcostalis, basi crassus, ad costæ medium stigma magnum at non bene determinatum fingens, et mox abruptus: metalis nervi non conspicui.

Sp. 1. Scel. rugosulus. Mas et Fem. *Ater, scaber, pedes nigri aut rufi, alæ fuscae.*

Scelio rugosulus . . . *Latr. Hist. Nat. des Crust. et des Insect.* XIII. 227; *Gén. Crust. et Insect.* IV. 32; *St. Fargeau et Serville, Encycl. Méthod.* X. 389; *Curtis, Brit. Ent.* VII. 325; *Boy. de Fonscol. Ann. Sci. Nat.* XXVI. 306; *Nees ab Esenbeck, Hymenopt. Ichneum. affin. Monogr.* II. 263.

Cinipsillum rugosulum. *Lam. Anim. sans Vertèbres* IV. 158.

Ater, obscurus, scaber, parce et breviter pubescens: oculi ocellique picei: antennæ nigræ, validæ, mari thoracis longitudine, fem. paullo breviores et latiores: thorax ovatus, convexus; mesothoracis parapsidum suturæ vix conspicuae: abdomen longiovatum, planum, basi angustius, fem. paullo longius et apice acutius: pedes nigri; tibiæ piceæ; trochanteres et tarsi rufo-picei: alæ fuscae, mediocres; vittæ basi et disco limpidiores; squamulæ piceæ; nervi vix conspicui. (Corp. long. lin. 1 $\frac{3}{4}$ —2; alar. lin. 2—2 $\frac{1}{4}$.)

Var. β.—Mas, tarsi rufi.

Var. γ.—Mas, tibiæ tarsique rufa.

Var. δ.—Mas, pedes omnino rufi.

Var. ε.—Fem. tibiae rufo-piceæ ; genua, tarsi et protibiæ rufa.

Found by the Comte de Castelneau, at Paris ; by Mr. Haliday, in August, on marshy heaths, in the Isles of Skye and Arran. Summer and autumn ; near London, Isle of Wight, Dorsetshire, Devonshire, South of France, &c.

GEN. VIII.—SPARASION.—*Latreille.*

Caput subquadratum, antice in aciem transversam acutam productum : mandibulæ arcuatæ, longæ, angustæ, bidentatae ; dentes subæquales : maxillæ breves, latæ, intus apice lobatae ; palpi 5-articulati, longissimi, filiformes ; articulus 1^{us}. gracilis ; 2^{us}. brevissimus ; 3^{us}. longi-cyathiformis, 1°. longior ; 4^{us}. 1ⁱ. longitudine ; 5^{us}. multo longior : labium subpentagonum, ligulam obtegens ; palpi 3-articulati, mediocres ; articulus 1^{us}. longi-cyathiformis ; 2^{us}. brevior ; 3^{us}. fusiformis, 1°. multo longior : oculi laterales, sat magni : antennæ 12-articulatae, apice graciliores, mari capitidis thoracisque longitudine, fem. paullo crassiores et breviores ; articuli approximati ; 1^{us}. fusiformis, longus ; 2^{us}. et 3^{us}. longi-cyathiformes ; 4^{us}. brevior ; 5^{us}. et sequentes ad 11^{um}. cyathiformes ; 12^{us}. conicus, angustus, acuminatus : thorax ovatus, convexus : pro- et metathorax brevia : mesothoracis parapsidum suturæ conspicuæ ; postscutellum tuberculum fingens subacutum : abdomen sessile, sublineare, planum, basi et apice angustius ; segmenta 6 dorsalia subæqualia conspicua, totidem ventralibus aciem fingentia : pedes validi, curraces ; femora et tibiæ subclavata ; tarsis articulus 1^{us}. multo longissimus, protarsis subtus arcuatus ; sequentes ad 4^{um}. longitudine decrescentes ; 5^{us}. longior ; unguis et pulvilli parvi : alæ pubescentes, iridescentes, mediocres ; proalis nervus subcostalis ad costæ medium stigma fingens et inde ramulum emittens angulatum, in alæ apicem porrectum ; metalis nervus subcostalis unicus simplex.

Sp. 1. Spar. frontale. Mas et Fem. *Atrum, protibiæ apice subitusque rufæ, tarsi picei, alæ fuscæ.*

Sparasion frontale . *Latr. Hist. Nat. des Crust. et des Insect. XIII. 230; Gen. Crust. et Insect. IV. 32; St. Fargeau et Serville, Encycl. Méthod. X. 443; Curtis, Brit. Ent. VII. 317; Nees ab Esenbeck, Hymenopt. Ichneum. affin. Monogr. II. 260.*

Ceraphron cornutus. *Jurine Hymenopteres.* (Pl. 13.)

Oxyurus frontalis . *Lam. Anim. sans Vertèbres.* IV. 129.

Mas.—Atrum, punctatum, pubescens, parum nitens: caput thoracis latitudine: oculi et ocelli picci: antennæ nigrae, pubescentes: abdomen thorace multo longius; segmenta scitissime sulcata, apud suturas laeviora: sexualia picea: pedes nigri; trochanteres, genua et tarsi picea; protibiae apice et subtus rufa: alae fuscæ; nervi obscuriores; squamulæ piceæ.

Fem.—Lævius, nitentius; alæ obscuriores. (Corp. long. lin. 1½; alar. lin. 2½.)

Very rare in England; abundant in the Forest of Fontainebleau; taken also in the south of France, and at Paris, by the Comte de Castelneau.

ART. XXXIII.—*Of the Double Metamorphosis in Macropodia Phalangium, or Spider-Crab, with Proofs of the Larvæ being Zoëa in Gegarcinus hydrodomus, Thelphusa erythropus, Eriphia caribæa, and Grapsus pelagicus.* By J. V. THOMPSON, F. L. S., Deputy Inspector-General of Hospitals.

HAVING, in preceding memoirs, given an account of the double metamorphosis in *Carcinus*^a and *Portunus*,^b and brought forward proofs that the larvæ of *Cancer*,^c of *Pinnotheres*,^d and of *Porcellana*,^e are also *Zoëa*, I have now to furnish all the other data illustrative of the same fact which my journal affords.

The above-mentioned genera include several of the more distinct and familiar types of the *Brachyura*, and those which I now make known, embracing the triangular division and several of the land-crabs, bring to a very satisfactory conclusion this interesting point.

^a In a paper sent to the Royal Society last April.

^b In the Entomological Magazine, Vol. III. p. 277.

^c Zool. Res. pl. 8.

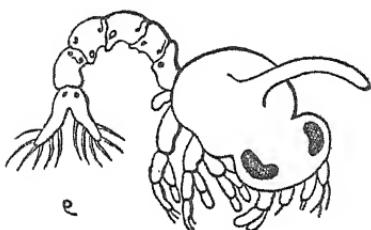
^d Ent. Mag. Vol. III. p. 275.

^e Ent. Mag. Vol. III. p. 85.

DOUBLE METAMORPHOSIS IN MACROPODIA PHALANGIUM.

This, which is our common spider-crab, is very abundant in the deep water of the harbour of Cove, and is often met with in spawn during the summer months; but as these kind of crabs are not to be kept alive out of their proper element, it was only by chance that I succeeded in discovering its larva, by capturing a female on the very point of hatching. This not only enabled me to sketch its imperfectly developed larva, (fig. 1,)

Fig. 1.



but also to secure a stock of them, as the best proofs of a fact which many zoologists are yet inclined to disbelieve. These sufficiently show that the larva is a *Zoëa*, with only two pair of cleft members. *Megalopæ*, of the same yellowish brown colour as the spider-crab, are also not uncommon in the same locality, but the full grown *Megalopa* (fig. 2.) has so much of the character of the perfect crab in its colour, texture, antennæ, and spines of the corselet, as to render it almost certain that it belongs to no other species; taking into account the discoveries previously made of *double metamorphosis*, and that the *Brachyura* pass through this intermediate disguise in quitting that of *Zoëa*.

In this instance, the proof is certainly not quite so clear and satisfactory as in those above referred to, and although the probability is in favour of the opinion I venture to hazard, yet it might be the *Megalopa* of the *M. Dorsettensis*, the only other species common here, to which it could possibly belong.

Fig. 2.



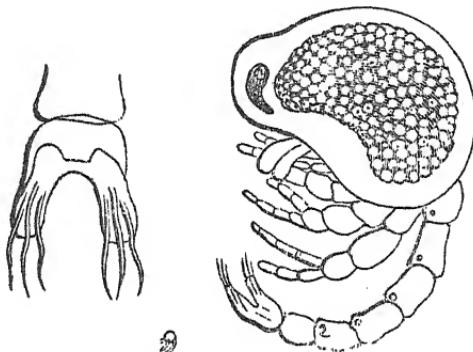
METAMORPHOSIS IN *GEGARCINUS HYDRODOMUS*, AND SOME OTHER TERRESTRIAL AND AMPHIBIOUS GENERA.

Having exhausted the subject of metamorphosis, or rather the proofs I had to bring forward in relation to our native crabs, it is peculiarly pleasing and satisfactory to have it in my

power to adduce some additional proofs of the same fact by examples taken from the above enumerated foreign genera of land and amphibious crabs, which friends abroad have enabled me to do, by sending me females carefully preserved in spirits, with ova on the point of hatching.

The Zoëa, or larvæ of these, although not perfectly developed, are as much so as that of the spider-crab, as given above, (fig. 1,) with which indeed they correspond in every essential particular. Fig. 3 represents that of *Gegarcinus*

Fig. 3.



hydromodus (Herbst. Pl. 41.) Fig. 4 is the larva of the crab (Herbst. Pl. 47. f. 7,) which I name *Thelphusa erythropus*.

Fig. 4.

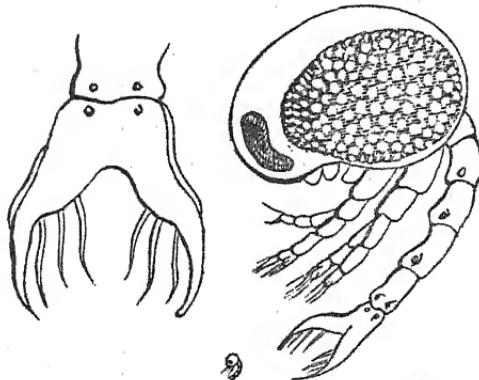
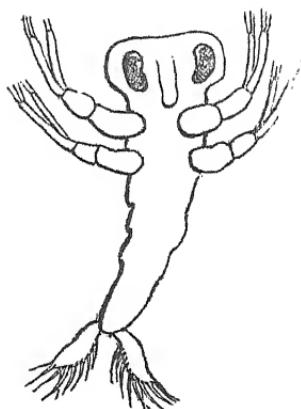


Fig. 5 is the larva still less perfectly formed of the crab I have designated as *Eriphia caribaea*. The larva of

Fig. 5.

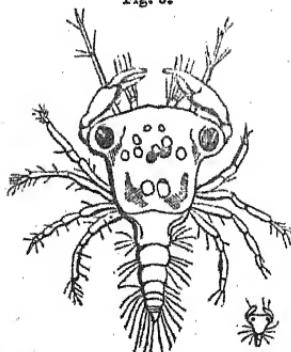


another crab, found abundantly on the gulf-weed off the coast of America, so exactly resembles the other larvae as not to require a figure; this I have set down in the catalogue of my *Crustacea*, (now in the possession of the Royal College of Surgeons of Ireland) as *Grapsus pelagicus*.

In concluding, I beg to recapitulate the genera of the *Brachyura*, to which my proofs of metamorphosis have now extended; viz. 1. *Cancer*. 2. *Carcinus*. 3. *Portunus*. 4. *Macropodia*. 5. *Pinnotheres*. 6. *Gegarcinus*. 7. *Thelphusa*. 8. *Grapsus*. 9. *Eriphia*. 10. *Porcellana* (an intermediate genus.)

Amongst the luminous *Crustacea*, taken in a voyage from the Mauritius, is the *Megalopa* (fig. 6) met with in the

Fig. 6.



Atlantic Ocean, on the 17th September, to the westward of the Cape Verd Islands.

Specimens of the larvæ and *Megalopæ* of the *Macropodia Phalangium*, of the larvæ of *Thelphusa erythropus* and *Grapsus pelagicus*, will be deposited, for inspection, in the Museum at Chatham, together with specimens of the following, illustrative of metamorphosis in the *Macroura*: viz. *Astacus marinus*,^f *Palinurus locusta*, *Crangon vulgaris*, and *Pagurus Bernhardus*, of which latter tribe I have a sufficient number to be enabled to supply also duplicates to the Linnæan Society and British Museum.

^f " In the beginning of July last (1835) I procured about two ounces of the eggs of the common lobster, taken by some fishermen at Sheringham, near Cromer, from what they term a sick lobster, i.e. one about to cast its spawn. The whole, having been put into spirits of wine, were of a red colour, except the eyes, which have the appearance of a large black spot on each egg. On opening an egg with a needle, the young lobster was immediately developed, and at the same time a strong colouring liquid exuded from the egg. Among the eggs were a few specimens of the young lobster. Their extreme delicacy and tenderness rendered it almost impossible to dissect them, but they displayed themselves very beautifully in water, and the extremities might be distinctly seen under the microscope. Blotches of colour were visible in the claw and upon various parts of the body. The eyes appeared in this early state sessile. The double antennæ were perceptible, the large claw was distinctly and perfectly formed, and the second leg with the terminal claw well made out. The other legs appeared imperfectly formed, and to be either very numerous, or mingled with transparent skin-like appendages, having the appearance of the skins of legs cast off in moulting. The tail was well developed, and was distinctly perceived even in those young which were forced from the egg with a needle. Two specimens of the young, which appeared double, were found, being strongly united at the head. Mr. Travis, a surgeon of Scarborough, clearly alludes to this state of the lobster; in his letter to Pennant,* he says, ' Though the ova be cast at all times of the year, they seem only to come to life during the warm summer months of July and August: great numbers of them may be found, *under the appearance of tadpoles*, swimming about the little pools left by the tide among the rocks, and many also, *under their proper form*, from half an inch to four inches in length.'—Mr. Brightwell, in No. LIII. of the Magazine of Natural History.—ED.

* See British Zoology, vol. iv. p. 12.

ART. XXXIV.—*Notes on various Insects.* By IONICUS.

(Continued from page 178.)

SIR,—IN offering a few more remarks on the entomology of Cephalonia and Corfu, I must limit my observations to a few of the most remarkable insects added to my cabinet in the course of eight months in the former and four in the latter. It is quite impossible, that in such a short space of time I could make myself acquainted with its list of insects. The few entomologists there had not commenced their collections much before my own; and on meeting in Corfu, we found several conspicuous species in each cabinet which were not to be found in any of the others.

4. *Carabus Preslii* is the only one of the genus which we found. It was common in spring and autumn under stones and rubbish in both islands. But if I was disappointed in *Carabi*, I had the pleasure to find that they gave way to an allied, and to me more interesting, genus, *Procrustes*.

5. *P. spretus* was the most common of these. There were likewise several varying very slightly in the form of their elytra, and their smoothness or rugosity, which we could not make out from Dejean. Some we felt convinced were new species, particularly a male and female I caught together in Cephalonia. In general appearance they so much resembled each other, that we could scarcely consider them as distinct species until the sexes of each were found together. They appear first in spring, and again in the autumn, from October till December.

6. *Calosoma auropunctatum*.—I found one specimen of this rare and handsome beetle in a limestone cavern not far from Point Kobbo, in Cephalonia, on June 12th, early in the morning. Amongst the brushwood of the high cliffs near this cavern, the most conspicuous shrub was a large species of spurge, most of which was completely stripped by the full-grown caterpillars of the *Deilephila Euphorbiæ*, some of which I took home and bred. I had never before seen a specimen of *C. auropunctatum*, but believe it to be the larger variety.

7. *Cicindela littoralis*.—Common about the bridge of Argostoli, the Lixurie and Argostoli coast, on the sands, from

April till September, living principally on insects thrown up by the sea. We could not find it in Corfu. It is much more active than *C. campestris*, and is extremely difficult to capture.

8. *Brachinus Græcus* is rather rare. It is a fine large species, and is met with under stones at the edges of marshes and moist ground. On the approach of danger it immediately salivates, and a bubble of liquid matter appears at its mouth (as frequently as at the anus); but upon contact with the air, it explodes with a considerable report, and the gaseous matter may be seen rising up like smoke. It has a pungent fetid odour, not unlike some of the churchyard beetles. On being immersed in boiling water to kill it, it let off one of its explosions, and the water for about an inch around it effervesced much in the same manner as a Seidlitz powder.

9. *Typhæus Ionicus?*^a—Smaller than *T. vulgaris*: thorax with a small curved horn at each side of the apex, and a very slight prominence at its centre: elytra striated. It is extremely common both in Cephalonia and Corfu during winter, spring, and autumn. On first meeting Mr. Kuper, he remarked, that he had also considered it as a distinct species. The female sex, like that of *T. vulgaris*, is unarmed, and in habits resembles the latter.

10. *Ateuchus variolosus* flies always in the middle and heat of the day. It walks backwards with its pellets, in which it buries its eggs, and which are generally made of asses' dung. The pellet is about an inch and a half, or two inches in diameter, and in rolling it, they stand almost on their heads, with their backs to it, guiding it with their hind feet, and occasionally mounting to the top, when they find difficulty in urging it on, probably to destroy its equilibrium. Its wedge-shaped and dentated clypeus gives it strong mechanical powers in removing obstacles; and as I frequently found it buried under stones, in looking for *Carabi*, we may remark the wisdom of Providence in furnishing it with a lever to raise such heavy weights. Although common near Gibraltar, in Albania, and Cephalonia, we did not find it in Corfu.

11. *A. sacer*.—I found two specimens on the sea shore near Lixurie.

12. *Gymnopleurus pillularius* has similar habits, and is the

* *Geotrupes subarmatus?* Dejean, Catalogue, 148.—ED.

stronger in proportion to its size. A friend placed one of them under a tumbler for me; but it soon brought the tumbler to the edge of the table, and overhanging it sufficiently to drop down. We afterwards placed a book above the tumbler, but this additional weight was not sufficient to prevent another display of its Herculean powers. Its pellets are twice the size of itself, and both male and female assist in rolling them. It is a common species in spring and autumn.

13. *Sisyphus Schaefferi* also rolls pellets. I could not discover the use of its long hind legs.

14. *Cymindis miliaris* and *C. homagrica* I found under moss-grown stones in a pine forest on the Black Mountain, Cephalonia, and close to a hut called Kennedy's Cottage. *Lamia Lugubris* I had captured, on a former excursion, on the very summit of the mountain, 5,316 feet above the level of the sea, on a mound of stones, containing petrified bones and fragments of terra cotta vases, supposed to have been the site of an altar to Jupiter. On this excursion I particularly gave my attention to examining the white bleached trunks of the pines which once clothed the mountain—a noble forest—and gave to it its surname of Black—(this forest was almost completely consumed by fire)—but without success. On returning to Kennedy's Cottage, I was told by a brother officer, who had remained behind, that he had amused himself in the morning by watching two of them crawling up one of the pines close to the cottage. I accordingly examined the tree, and even took the trouble to climb it, but without success, and sat down to our pic-nic dinner not altogether pleased; for I had been very unsuccessful, finding only scorpions, centipedes, and insects extremely common either in England or Cephalonia; but after dinner, at sunset, the *Lamiae* again took their walk, and I captured them crawling down the pine. In winter, part of the Black Mountain is covered with snow, and in summer the climate is a delightful contrast to the heat of Cephalonia. I found equally few flowers, the only interesting plants being the piony rose, holyhock, bee orchis, and sweet briar. I felt the more surprised, from having shortly before crossed the Simplon and Cenis, in which nature seems to do her best to blend the floras of Italy and Lapland. *Lamia tristis* I also found on pine; and may remark that it was much darker in colour than such as I found on white cypress, olive, fig, and quince.

This *Lamia* is most commonly found under stones, or crawling on walls, and appears to approach in habits the *Dorcadion* genus.

15. *Gryllus Italicus*. Fab.—The only species of locust in Cephalonia which appeared in such numbers as to prove destructive. The larvæ appeared in May: some were very small, and they quite covered the ground for several yards, leaping in every direction when approached. The grass was always burned and withered in the places they frequented. The full-grown locust appeared about the middle of June, and on examining one, which I caught, I found a great many large pink eggs attached to the under wings, which were likewise pink. I extremely regret not being able to pay more attention to this circumstance, nor to breed the parasites. How these eggs came to be attached to the wings, which are under and protected by the tegmina, it is difficult to conjecture. I mention this as a hint to such entomologists as are in localities with *Gryllus cærulescens*, our English and closely allied species.

Nov. 4, 1835.

ART. XXXV.—*On the Origin of the Entozoa in the Bodies of Animals.* By HENRY METFORD, M. R. C. S.

THE term *Entozoa* (from the Greek εντὸς, within, and ξών, an animal) was first employed, by Rudolphi, to designate all those creatures which naturally and permanently infest the interior of other animals; the first part of the definition excluding all those which reside in the animal for a limited period only, such as the larvæ of insects, &c.; the latter part of the definition being used in contradistinction to *Ectozoa*, or those animals which inhabit the surface of the body. The term 'Parasite' has also been applied to them, probably from an analogy between their mode of life and that of a court-sponger, or any other animal living on the labour, or at the expense of another; but as this includes a great variety of living creatures, exceedingly dissimilar in other respects, this single point of similarity does not furnish us with the groundwork on which to found a rational nomenclature. The very simple structure of the *Entozoa* points out to us the necessity

of assigning to them nearly the last place in the chain of animal existence, as we proceed from man, the most perfect and complicated organism, downwards. Cuvier has placed them in the second class of *Zoophytes*, and has included with them several *external* species. According to his arrangement, we have them divided into the Cavitaires, or those which have an abdominal cavity and a distinct intestinal canal; and the Parenchymateux, or those in which no proper intestinal tube is evident, and which, for the most part, possess a homogeneous structure.

This arrangement of Cuvier's is, however, unnatural, seeing that worms, most dissimilar in appearance, round, flat, and globular, are here promiscuously associated. The classification of Goeze is perhaps the most natural, (although far from perfect,) and it is that which Rudolphi has embraced—substituting classical names for German ones. The following are the orders. (See Rudolphi.)

1. *Nematoidea*—(*ῥῆμα*, a thread, and *εἶδος*, form) *vermes teretes*; *Rundwürmur* of Zeder.
2. *Acanthocephala* (*ἄκανθα*, a thorn, and *κεφαλή*, the head) *vermes uncinati*; *Läkenwürmur* of Zeder.
3. *Trematoda* (*ῥῆμα*, a foramen); *vermes suctori*; *Sangwürmur* of Zeder.
4. *Cestoidea* (*κέστος*, a band, and *εἶδος*, form) *vermes taenioformes*; *Baudwürmur* of Zeder.
5. *Cystica* (*κύστις*, a bladder); *vermes vesiculores*, *Blasenwürmur* of Zeder.

I have not thought it requisite, at present, to enter more fully into a description of this singular class of animals, than to give that general idea of their external characters which the classification of Goeze presents, but hope, at a future time, to avail myself of your excellent Magazine, by giving the results of my examination into the structure of some of them. Perhaps to most persons the title at the head of this paper would convey a correct idea of the object of the inquiry, but lest it should not be explicit to all, I wish to state that I am not about to inquire into the mysteries of worm generation, (for this would indeed be hopeless,) but to confine myself to the question, Whence do they arise? Nearly all the orders of animals with which we are acquainted are subject to them;

indeed, on the authority of Rudolphi, no class is exempt, for the vermes themselves are liable to their depredations; and I believe we are yet ignorant of the limit to the application of the doctrine of "vive inter vivas." That the existence of parasitical worms should long have been known and observed is not surprising, for they are constantly obtruding themselves on our notice, in the every-day operations of the anatomist, comparative and human, the butcher and the cook. The Billingsgate fishwoman can tell us a long history about them; for, if in any class of animals they superabound, they seem to do so in the fish. Coextensive with the discovery of these creatures in the different parts and organs of animals, has been the inquiry, Whence their origin? and to the solution of this difficulty the minds of men have been directed from a very early period; it is not my intention, however, to enter into an examination of the crude notions which have from time to time been entertained on this subject, although we might possibly derive some amusement from doing so, nor to examine into the favourite doctrine of the ancients, spontaneous generation on the one hand, or that modification of it entertained by some of the moderns on the other.^a It is now two years since I first gave this subject much consideration, when I instituted experiments, with the hope of throwing some light upon it; how far I have succeeded in this remains to be seen in the sequel. Upon a superficial view of the inquiry, it evidently divides itself into two branches—either that the source from which worms are derived is an extrinsic one, or that they are spontaneously generated within the animal which they infest. The latter I am unwilling to admit: let us examine the facts which favour the former opinion; and first, do they gain access through any of the mucous canals? This view of the matter has met with many advocates, some of whom have hastily adopted it as the most probable; others, from the supposed observation of parasitical animals in situations exterior to the body. Rudolphi objects strongly to this method of

^a It is not an uncommon idea, in many parts of the country, that the seeds of gooseberries are the eggs of worms; and, in proof of it, we are asked to account for the prevalence of the verminous diathesis during the gooseberry season in any more probable manner! And I have heard it gravely asserted that the liver fluke-worm, *Destoma hepaticum*, is the offspring of the seeds of the *Ranunculus flammula*, or *Ranunculus acris*! Hasty induction is the most fruitful source of error, and often leads men to confound the *propter hoc* with the *post hoc*.

explaining the difficulty, and successfully controverts the arguments adduced in its favour. If the worms found in animals were indeed to be met with in other situations, it would furnish great support to that opinion which refers their origin to an outward source, but those instances which have been adduced admit of an easy solution. Linnæus (System. Natur. Ed. xii.) tells us that he has found the *Distoma hepaticum*, or liver-fluke, in spring water; the *Tænia vulgaris* rather small in muddy springs; the *Ascaris vermicularis*, or thread-worm, in marshes, and in the roots of putrefying plants. It is evident that this celebrated naturalist, whilst travelling in Gothland, had confounded the features which characterize the *Distoma hepaticum* and the *Tænia gasterostei solida*, (which he has often mistaken for *Tænia vulgaris*,) with those of *Planaria lactea*; but what worm he could have mistaken for the *Ascaris vermicularis* I am at a loss to conceive.^b

As he had investigated but few *Entozoa*, and these only incidentally, we cannot wonder at the vagueness and want of precision in his descriptions. The fact of his having confounded the *Tænia* of man with those of the *Mammalia*, and having denied the existence of a head in all of them, is sufficient proof that he had not submitted them to careful examination; in the same way, therefore, he may have easily mistaken extrinsic worms for human, the change in which he had supposed to have taken place during the period of their abode in the animal body. He has betrayed himself into a similar error in the existence of the *Lumbricus terrestris*, or common earth-worm, a variety of which he says he has met with in the intestines; he hastily concludes that this differs from the *Ascaris Lumbricoides*, and improperly adds it to the genus *Lumbricus*.

Gadd informs us, that it had occurred to him in 1747 to find the *Tænia articulata flava*, (characterized by two lateral apertures,) and identical with that which infests man, in the river Fennonia, which contains yellow ochre. As nothing fur-

^b "Vermen album molliusculum, cylindraceum, antice crassum subrostratum, postice attenuatum, pluribus abhinc annis, quod non dissimulandum, in aqua palustri copiose reperi et microscopii ope pingi curavi, ab Ascaride vermiculari tamen diversum, cum vero ejus descriptionem facere accuratiusque examen instituere impeditus fuerim, nec postea unquam occurserit, hoc seponere lubet. Facile erit Ascaris vermicularis a perillustri a Linné in paludibus reperta."—Otto. F. Müller. *Verm. terrestre. et fluviatil. Historia.* Vol. I. Part II. p. 36.

ther is added concerning it, or the mode in which he discovered it, the observation of such a man, unknown to Helminthologists, cannot be of itself sufficient to establish the fact: whether he mistook the *Planaria lactea*, or the common ligula of fish, for the *Tænia*, cannot be positively asserted.

Unzer remembers to have seen the *Tænia* in a well. Tissot likewise asserts, that a *Tænia* he had found in a similar situation, corresponded with that found in man; the former, however, on being questioned by O. Fr. Muller on the *Tænia* he had discovered, said that it was only a portion about an inch long, which may have been digested by a man or fish, and carried into the well by accident; and this was actually the case in the instance of Tissot. But even Gmelin, as we learn from Pallas, declared that he had himself once doubted whether the eggs of frogs, linked together, were not a new species of *Tænia*. The illustrious Muller, whilst travelling on the confines of Suecia, having been assured that a certain river abounded with *Tæniæ*, made a search accordingly. He drew out masses of dead entangled *Tæniæ*, and with them (a fact which explains the circumstance) a quantity of the intestines of fishes, which the fishermen were in the habit of throwing into the water. As the *Tænia* was found in the river dead, we cannot conclude that this was the place of its birth.

Bremser found *Ascarides lumbricoides* at all periods of the year in water, which he drew from the well of Coenubus Divus Ludgerus, in which he could find neither fish nor any living creature, from the bodies of which they could have been excreted. He found these same worms not only at Helmstad, but also in spring water near Ballenstad, in the beginning of December 1772. These white *Ascarides* were about three lines in length, never so much as four, and of the thickness of a slender thread; but he had observed that the mouth was furnished with three distinct nodules, and by the assistance of a microscope, he perceived, in the midst of these a tubule, so that there could be no doubt as to the species. He inferred, that by drinking this water, the worms would be carried into the body, and by being nourished, become larger. Now, if the observation of Bremser had led him to the opinion that the worm in question was an *Ascaus*, still I cannot understand why he should have regarded it as the young of the *A. lumbricus*, and not rather that of the *A. vermicularis*, and the

want of resemblance to the former being already conspicuous, argues the fallacy of his opinion. But amongst the innumerable species of *Ascarides* known, which of them, in the state of *embryosus*, does he imagine he could recognize, so as to refer it to this or that species? He surely cannot be ignorant that the characters he has mentioned as diagnostic of *Ascaris lumbricoides* (viz. the nodules of the mouth with the intervening tubule), are common to the whole of the genus *Ascaris*, and if he believed that *Ascarides* could exist in such a cold medium as water (and this too in the month of December,) this knowledge alone should have induced him to regard it as a peculiar worm. But if he had wished to establish the identity of this species, he should have done so by furnishing good descriptions or drawings of it, so that by examining its external features and internal structure, a correct judgment might have been formed of the animal. We should now refer to the remarks which were made by Muller (p. 382, note) on the *Ascaris vermicularis* of Linnaeus. Leuwenhoeck, Schœffer, and others, have been led into a similar error with respect to the *Distoma hepaticum*, when they have contended for the existence of these animals in streams, brooks, &c., for O. F. Muller, a most indefatigable investigator of aquatic animalcules, has detected many *Planariae* in such situations, but never any thing like the Liver-Fluke. Nor have these writers ever given any proof of their having seen the true *Distoma*; they have merely made the vague statement.

We are not in the possession of any certain and indubitable facts proving that parasitical worms are generated in water, or in any situation external to the body. The worms of warm-blooded animals cannot live in a low temperature, and therefore soon die when removed from the animal body. Briereis must have lost sight of this fact, or it may never have occurred to him, since he thinks that the *Ascaris lumbricoides* of man could support life in cold spring water in the midst of winter, when the temperature of the human body is about 98° Fahrenheit. Such worms can scarcely be transferred to water in a living state, as exposure to the air alone soon destroys them. The *Filaria Medinensis*, or Guinea worm, indeed, attempts sometimes to leave the body before death, but in its exit it quickly becomes dry and rigid, and perishes; nor is it possible to protract the life of a ligule for any considerable time when

removed from the body of a fish. Where, I would ask, would the worms find a suitable kind of nourishment, or a place of abode in any respect resembling the situation they had left? If worms pass in and out of the animal body in the mode which Bremser would have us to believe, they certainly should be far more numerous than they are, we should meet with them more frequently, and they would promiscuously infest every animal to whom they should be accessible.

Those who have failed in supporting this position, still tenacious of their opinion, bring it forward in a new dress, and maintain that worms undergo a positive metamorphosis in the body of the animal, or, in some way or other, accommodate themselves to the change. But is this true? For aquatic or terrestrial worms carried into the body by accident, soon die, and that from two causes; for they either suffer digestion, or sink under the increased temperature. I have often found extraneous worms in many animals, but invariably dead, and more or less digested; they may be found chiefly in the stomachs of mice, moles, hedge-hogs, birds, and fishes. These facts alone are sufficient to prove the difference between extrinsic and parasitic worms, because those of the latter class, which pass their lives in the œsophagus, stomach, and intestines, resist the solvent power of the gastric and intestinal fluids, and the triturating force exercised by the stomach: indeed, I have often seen in the stomach of the common pigeon, the lining membrane of which is nearly as hard as that of the fowl, abundance of *Tænia* and *Amphistomata* attached to it; and even when the bird had been dead ten hours, I have found them adherent to the inner coat of the stomach. What extraneous worms, I would ask, could resist the power of such a stomach? I am well persuaded that none could; but even supposing this possible, the natural temperature of the first orders of animals would prove rapidly fatal to them. Frequent mention is made by authors of the *Gordius aquaticus*, or hair-tail worm, having found its way into the bodies of men and horses; and Pallas himself relates an instance. The subject of it was a man, who some days after washing in a river, perceived on the dorsum of his feet an inflamed spot, of about an inch in diameter. The centre was rendered somewhat prominent by the presence of a projecting *Gordius*, of a darkish colour, not unlike a horse-hair; on attempting to remove it

he drew forth the worm, a foot and a half in length. Pallas does not tell us whether the worm was living or not; but as the worm differs essentially from the *Filaria medinensis*, or Guinea worm, which may exist in the body for months and years without exciting suspicion of its presence, it is not to be wondered at that the *Gordius*, uneasy in its new habitation, should speedily excite inflammation; and it is said, indeed, that the *Gordius* is fatal to fish as soon as they become inhabitants of their bodies, and yet fish are infested by their own peculiar parasites without fatal consequences. Bacounim observed, that the *Gordius aquaticus* (*aquarum Taurinensis*) was destroyed when exposed to a temperature at or above 25° or 26° Reaumur, (90° or 91° Fahrenheit,) in milk or water; and he asserts, as the result of experiment, that dogs may swallow them with impunity. The *Gordius* very rarely finds an entrance into man or any other animal, excepting fish; and Pallas, who has seen them nowhere so abundant as near Waldai, says, that in this situation he had never heard of their having been detected under the human skin. Even allowing that the fact of the *Gordius* taking up its abode in the horse is supported on numerous authorities, it still remains a question whether the observers have not mistaken the *Filaria papillosa equi* for the *Gordius*. A similar error has prevailed in respect to nearly all the Ascarides of fish,—for they have been mistaken for *Gordii*; and I have observed, in dissecting dead fish, *Ascarides* which have left their usual situation, and wandered into the mouth and branchiæ. Degeer (in Bibl. n. 234) describes a certain species of *Filaria* infesting a kind of moth, and in another place a plate is given of it, when it stands for the true *Gordius aquaticus*. The doctrine of the metamorphosis of worms was long since refuted by Vallisnieri, and I shall briefly notice that such a metamorphosis does not take place in any of these animals, neither amongst the viviparous or oviparous, for the same gradual evolution and perfection of the body which is observed in all the other classes of animals is necessary here.

“A cow to bear a fawn you ne'er did see,
Nor eagle's egg the gentle dove set free.”

There are certain peculiarities which distinguish foetal and adult *Entozoa*, but in these no perceptible change whatever

takes place ; and if any really does occur, it is so inconsiderable that they may be easily recognised. Some naturalists, indeed, have carefully observed, during many years, the growth of intestinal worms : nor are we ignorant that insects which take up a temporal abode in the animal body undergo a metamorphosis ; these are furnished with a special apparatus for that end, which may be observed in certain larvæ ; but the structure of insects is much more complicated than that of the *Entozoa* and *Gymnodela*. Kunsemüller must certainly have overlooked this, when he pronounces it as a still doubtful question whether the *Vena medinensis*, or Guinea-worm, be a naked worm, or the larva of an insect which lives in stagnant waters and marshy situations, and deposits its ova under the human skin ; for the larvæ of insects differ widely from all the *Entozoa*, and from the *Filariæ* in particular, even the most simple of them, and this both in external form and internal structure. Jordens is drawn into a somewhat similar error, and he describes, as a new species of *Ascarides*, two larvæ of the genus *Musea*, dejected by a man, and thus enriched the genus by adding the two species *Stephanostoma* and *Conostoma* !

Although the advocates of this doctrine may be convinced of its fallacy by these and such like arguments, and may be satisfied of the impossibility of extrinsic worms finding an entrance into the deep-seated parts of the body which are obnoxious to certain species of worms alone, they allow additional latitude to their imagination, and conceive that, instead of the animals themselves, their *ovulæ* may be carried into the body.

Many of the ancients, and some of the moderns, have conceived that the ovulæ of worms, which pass out of the animal into the air and water, may be carried into the bodies of other animals through the medium of food and drinks, and, being deposited there, become hatched. This idea owes its foundation, no doubt, to the observation of a profusion of eggs in the genital apparatus and ovaries of certain worms ; and the experiment instituted by Pallas, in which ovules placed in the stomach of a dog produced young *Tæniae*, was considered by him conclusive of the question. This celebrated individual has been much praised for this discovery, but he is obliged to support his position by a variety of arguments, many of which are opposed to the result of his experiments. He thinks

that the propagation of *Tæniæ* admits of a ready explanation, when we remember how fish are transported into lakes and ponds, recently stagnant, by aquatic birds, or how the *Vorticella rotatoria* is generated in rain-water contained in the pipes under the roofs of houses, and other lofty situations. He thinks that this mode of propagation is indubitable as regards the *Tæniæ* at least, the eggs of which he supposes to be every where distributed (external to the body), and that by accident they become transported into other animals through the medium of nutriment. The following is a summary of his arguments:—

1. Worms are by far the most common in large cities, or in other situations much frequented either by men or animals, particularly under the influence of bad food and insufficient ventilation; where humidity of the atmosphere and soil may preserve the ova and protect them whilst out of their natural situation; where the water of cisterns, closed wells, or rivers receiving the filth and refuse from the city itself, is used as the common drink: so, on the other hand, all the species of worms are infinitely more uncommon in the deserted and only recently-inhabited regions of Russia and Siberia, or among the shepherds and Nomades, or among wild animals, than in the more civilized and thickly-populated parts of Europe.

2. The place of abode of certain species of worms is always the same, whether it be in warm-blooded animals, birds, or fishes; and doubtless it is in these animals alone that they would meet with that degree of temperature and kind of nutriment necessary to their development, and in the absence of which they would perish.

3. Worms have been observed in new-born animals, and even in the foetus *in utero*.

And lastly, it has not been an uncommon observation, that the *Tæniæ* has materially aggravated an epidemic; however this may be, it is certain that the *Ferae*, or beasts of prey, are notoriously infested with worms; that the *Glires*, who carefully masticate their nutriment, are less commonly so; and that it is a very rare occurrence comparatively to discover them in the *Ruminantia*, in whom the food undergoes extreme comminution. Carnivorous birds and those which are domesticated are very subject to them; and among the migratory fish and those which are tenacious of life, parasitical animals abound.

These, then, are the arguments which this celebrated man

has urged in support of his position, viz. that the eggs of worms are carried into the body, and are there hatched; nor has any one of his supporters brought forward more powerful arguments, or contributed any new ones, that I am aware of. But, as regards the first argument, it cannot be a matter of surprise that the verminous diathesis should attack the poorer classes of society in densely-peopled towns, surrounded, as they are, by all the evils of poverty, sustaining life by the roughest kinds of food, and with water frequently of an unwholesome nature; causes which must weaken the intestinal canal, impair digestion, produce a copious secretion of unhealthy mucus, and thus favour the generation of worms. For a similar reason, the weakest animals should most frequently suffer from them, as would be seen in the young of all animals, and particularly in those which are domesticated. Nor is the fact (which the author lays much stress upon), viz. that certain classes of animals are more obnoxious to them than others, depending on the mechanism of their digestive apparatus, supported on indubitable evidence.

I never understood that the *Feræ* were particularly liable to worms; and it appears, on the testimony of Goeze, that they are frequently found *free* from them. Pallas remarks the same thing in the instance of the dog and cat; but we must not forget that by domestication they are unlike the same animals in a wild state. Among the *Glires*, hares and rabbits are more obnoxious to worms than the weasel, fox, or otter, and the rat and mouse are much more subject to them; for in these we find *Cysticercus hepatis fasciolaris* exceedingly common; and frequently, too, *Ascarides*, *Tæniae*, and others are to be found. The *Ruminantia* are, above all, most subject to worms. Pallas was unacquainted with many of these, some of which have been since discovered by Rudolphi. The sheep and goat abound with worms; also the cow and stag, and it would be difficult to discover one individual free from them. Pigs, who delight in filth and refuse, are not (as Goeze has truly remarked) more liable to worms than other animals. I believe that the carnivorous tribes of birds are not more subject to worms than others. Rudolphi, indeed, has frequently found falcons free from them, and has never found so many among the genus *Strix*, or owl tribe, as in that of the *Scolopax*, snipe, woodcock, &c.; for the former never have *Tæniae*, whilst the latter possess a profusion of

them. Some authors deny the presence of worms in the small birds, even in the *Passeres*; but this opinion is founded on imperfect observations, for at least three species of worms have been detected in the nightingale (*Motacilla Luscinia*)^c. In swallows I have found them also, and in the sparrow and others. It cannot be doubted that the domesticated birds labour under worms to a great extent, particularly those reared in cities, and that are crammed: those who range freely in the country, and that are in good health, are less troubled with them; yet aquatic birds abound in worms. As far as regards fish, it is entirely false that the migratory ones nourish more of them than others; for during many years of careful examination of *Harengus* and *Salaris*, Rudolphi never found a larger number in them than in the non-migratory kinds. It, after all, depends mostly upon the nature of the food and the season of the year; thus the pike (*Esox Lucius*) sometimes abound in worms, at others are destitute of them; so fishes that take in quantities of sand in their attempts to gorge large objects, as has been seen in the sturgeon (*Acripenser sturio*) in particular, and in those whose stomachs and intestines are replete with the *débris* of hard shells, as may be often seen in the *Pleuronectes*, are often free from them.

The explanation of the fact, that whole families are often simultaneously afflicted with, or are free from worms, is not difficult; for the most part they all partake of the same kind of food or drink, whether that be bad or good, by which the *verminous diathesis* is increased or diminished; and the case mentioned by Goeze of a family, in Brunswick, being all of them (two servants excepted) afflicted with the Lumbric worm, admits of a similar explanation, for the latter were probably furnished with more robust constitutions, indulged in spirits, or were, in some way or other, protected from the bad influence of the common fare.

The second argument is by no means favourable to the doctrine supported by Pallas, viz. that certain species of worms infest particular species of animals, and are not to be met with promiscuously in every species; for if the ovules are diffused through the atmosphere, or are floating in the

^c *Monostoma ventricosum*, in the liver; *Distoma macrostomum*, in the rectum; *Taenia platycephala*, in the small intestines.

water, they easily might find access to the interior of a great variety of animals, which certainly has not been observed.

I must confess that I am astonished at the third argument brought forward by this great man, for it is diametrically opposed to his hypothesis. “ It is impossible that worms discovered in the foetus *in utero* can owe their existence to ovules derived from without, since there is no external communication.”

But in addition to these objections to the hypothesis, there are abundance of others, and those too of great importance; I do not deny that many of the eggs of worms, living in the alimentary tube, may pass out with the faeces, but I feel persuaded that they rapidly die. The great number of eggs existing in one worm does of itself present a great obstacle to their being all expelled; and, in order that they should not all perish, they are made to abound to such a degree that some of them at least should find a congenial settlement. That they are capable of maintaining life whilst under the influence of air is highly improbable, seeing that it rapidly destroys the worms themselves, rendering them stiff and dry:—would the tender ovules be less susceptible of such influence? And if we could form a conception of the myriads of eggs and seeds which the imaginations of authors have wafted into our atmosphere, we may well smile, for they had formed a large part of its constitution.

As the eggs of worms found in warm-blooded animals require the same degree of temperature as the parents, I can hardly think it possible that the germs could be preserved alive in so cold a medium as water. But even allowing that the ovules are capable of supporting life under all the circumstances of extrinsic existence, it still remains a question,—How do they reach those regions of the body which some of them are known to occupy? That they are of too large a magnitude to pass by the small vessels I shall prove presently, and these are the only media through which they can arrive at the brain, the liver, and some other situations. As great a difficulty involves the solution of the question—By what means are they transported from these situations into the water, air, &c.? Lastly, How does this doctrine apply to those *Entosoa* which lead a solitary life enclosed in a cyst, unprovided with the means for copulation, and in whom there is no vestige either of genital organs or eggs? If, however, it

should be thought that the arguments as yet brought forward may be easily overthrown, there is still one which sets all controversy at defiance; and this is, that *a large proportion of intestinal worms are viviparous*, therefore we must cease to assume that they are procreated from ovules derived from without, and it would be too great a tax upon our powers of speculation to conceive any mode by which living embryos could be carried into the bodies of foetal animals enclosed in the uterus; and no one who has duly considered the preceding arguments will contend that these embryos are capable of maintaining life out of the animal body.

The fact that *Entozoa* reside, and are propagated in the healthy bodies of animals, is one which proves that animal bodies are best adapted to the habits and nature of intestinal worms; for foreign worms quickly die in them, nor have they the remotest tendency to propagate. We have indeed observed the larvae of *Dipterous* insects, and of certain species of the genus *Cestrus*, in various parts of domestic animals, but they leave the body, after a stated time, to undergo a metamorphosis out of it; the eggs, therefore, are deposited on the surface of the animal by the perfect insect, and the generative process is not conducted within it: and this is certainly an important distinction; nevertheless it is still doubtful whether some species of *Coleoptera*, of the hardier kinds, may not undergo a metamorphosis within an animal body. But these are carried into the body from without by accident, and their young are evident to the senses.

They are generated too in all parts of the animal body.

This is an argument of great weight, for animals (insects) carried into the body from without, are only found in those parts of it which have extensive external communication, viz. the intestinal canal, under the skin, frontal sinuses, &c.; whereas there is no part of the body, however far removed from external communication, which is free from parasitical inhabitants, and it is impossible to conceive any method by which they can make their way to the brain and other excluded parts.

But besides, parasitical worms residing in an animal not only do not inflict any injury on their host, but frequently excite no suspicion of their presence. On the contrary, when extrinsic animals take up their abode in the bodies of animals,

they soon prove themselves very unwelcome guests, by tormenting with severe pain, and by producing great emaciation; unless indeed they are speedily ejected, or perish under the intolerable heat of their new residence, or yield to the digestive powers of the stomach and intestines: for whether they be under the skin or in the stomach, they are constantly restless, excepting perhaps the larvæ of the *Œstrus*, which, as they are more congenial, and exist in fewer numbers, are sometimes nourished with impunity. *Entozoa*, on the contrary, frequently never excite a knowledge of their presence, and are productive of but little mischief, and that little accidentally. I think that those worms which spring up in the body and have become habituated to it, lead a tranquil life, and bear the continual but moderate motions of all the parts, and the accustomed stimulus of the chyme, faeces, &c. without inconvenience; and that it is not till the motions of the body have become unusually violent (perhaps spasmodic), the food poor or insufficient, the secretions of the chyme acrid, as in typhus, that they become irritable, and attempt an exit. Hence, as I have before stated, no sooner have they been dejected, or taken flight, than they as quickly perish. Some authors, opposed to the innate doctrine, have laid great stress upon the fact that some species of worms are peculiar to certain species of animals; but how they would wish us to apply the fact in their favour I am at a loss to discover.

In having pointed out the extravagance of some writers on this subject, it must not be understood that I deny their position *in toto*, for I am aware that many worms are peculiar to certain animals, and that there is less distinction between the *Entozoa* of similar kinds of animals, or of similar parts of the same, than between those of either, in which there is a striking dissimilarity. Now this could hardly take place, supposing the parasite germs to be carried in from without; for those animalcules which are diffused through the same region, and occupy the same situation promiscuously, are all equally exposed to the chance of indiscriminate transportation into the same animal body. It was the opinion of Retzius that the ovules found a congenial habitation in those animals only, or in those situations within the animal in which we discover them, and that they either perished or were not developed when carried into others less congenial, or positively noxious,

and consequently, that we could scarcely pronounce that worms are connate; and he further urges, that those animals which feed in dry, arid situations are never infected by them, and, on the contrary, that those who seek their food in low and humid districts are exceedingly prone to them. With great deference to the opinion of this celebrated individual, I do not think his hypothesis—"the eggs can only be developed in those situations in which we discover them"—by any means removes one difficulty; for I apprehend that if they were placed in the bodies of different animals (I do not mean in those which present the extremes of difference), that they would be hatched, as it is termed, and take up their abode in them. But the ovules, and these too in a very recent state, must be immediately deposited in animals furnished with the requisite degree of temperature; and as this latter is a condition essential to the growth and development of the embryo worm, wherever it may have been deposited, it admits of no delay in what we may term its middle state, viz. the cold air and water. I am led, from this train of reasoning, to view the hypothesis which regards external communication as essential (whether it be with dry or moist air, dry or humid ground) as an absurd one. I shall have occasion to notice, presently, the influence which humid situations may have in favouring the "verminous diathesis."

I have already pointed out the necessity of giving the *Entozoa* a distinct place in the chain of living organized beings. Their tender and delicate structure, their almost universal inability to endure exposure to air and cold, render the warm animal fluids essential to their vitality; their very great mobility and elasticity give them the power of contracting their bodies into an extremely small space, of elongating them almost indefinitely, of drawing them up into innumerable plicæ, or folds, and even of crawling along the intestinal canal. They are furnished with contractile porules, or mouths for suction, with unciform retinacula, by means of which they firmly adhere to sustaining parts without injuring them; and so tenacious is their hold, that when once firmly fixed, they will allow their bodies to break asunder rather than give way to any efforts made for the purpose of disengaging them. Some of them possess an absorbing function, by means of which nutritious fluids, easy of assimilation, are conveyed into the body; in short, we see in

these animals a singular and beautiful adaptation of structure and function to the peculiar circumstances of their existence, and they present us with another instance of the fostering care which nature displays in the preservation of her offspring. The proportion between males and females (that of the latter being by far the greatest); the immense number of embryones and eggs generated, by which arrangement the preservation and maturation of some, at least, is preserved; the extreme delicacy of structure in these, of itself an unanswerable objection to their being transported into other situations; and, lastly, their fugacious vitality, (the parents dying immediately on the exclusion of their young); are facts, all of which conspire to form the opinion that they are peculiar animals.

A careful examination of the facts bearing on this question has brought us to the conclusion that neither the eggs of worms, nor the worms themselves, enter the animal body by any of the mucous cavities. Under this conviction, therefore, I thought it very desirable to ascertain the earliest period in the life of an animal at which worms exist, and with this view instituted the following experiment. Having a pregnant cat at hand, I determined upon making the experiment upon her kittens. I had two motives in selecting cats as the subjects of experiment: 1st, That I have invariably found worms in adult cats at various ages; viz. *Ascaris mystax* in the stomach and small intestines, and *Tænia cuneiceps* in the latter situation. 2dly, That the kittens would have been killed in the usual course of events, and therefore that I was not laying myself open to the charge of wantonly wasting life. Well, her accouchement brought five young. The first I killed instantly, but on examination found nothing but mucus and meconium. At the end of the third day I examined the second, and discovered two *Ascarides* in the stomach, and several pieces of small *Tænia* in the small intestines. At the expiration of the fifth day the third was examined, but to no purpose; for, although I explored the whole intestinal part with a lens, no trace of a worm was present. At the end of the tenth day the alimentary canal of the fourth was exposed. Three *Ascarides* in the stomach, one in the duodenum, and two perfect *Tænia*, besides pieces, were brought to light.

I deferred the examination of the fifth till the fifteenth day,

when, to my surprise, the stomach contained only one *Ascaris*, and that a small one, and the small intestines only a few pieces of *Tæniæ*. I should have mentioned, that the excrement of the kittens in the box presented occasionally pieces of *Tæniæ*. The results of this experiment were so far satisfactory as that they made known the very early period at which cats become the subjects of worms, but no farther, since they were not direct proofs of the cognate origin of parasitical animals; indeed, the fact of my having detected none in the first animal, and six worms, besides fragments of others in the fourth, went rather to favour that view which regards intestinal worms as of external origin. It then struck me that if their existence in foetal animals could be determined beyond a doubt, that the inquiry would then be brought within somewhat narrower limits, and that the question of their external origin would be set at rest. I had not an opportunity of pursuing the subject till the following autumn and winter, when I had frequent opportunities of examining foetal lambs in the Whitechapel slaughterhouses: here, in several instances, I found the fluke, of no mean size, in the biliary tubes. I have since found, on referring to the excellent helminthological work of Rudolphi, that he notices the same thing as having been observed by Pallas, but adds, that the observation requires confirmation, seeing that many inorganic substances, concrete mucus, albuminous flukes, &c. have been confounded with worms, an insinuation which, by the by, Pallas ill deserves. Having convinced myself of the cognate origin of parasitical animals in the *Mammalia*, I determined to embrace the first opportunity which should occur of examining the intestines of birds in ovo. In the following spring such an opportunity presented itself, and the thrush was the subject. It may be well to mention, that the thrush affords "a house and home" to at least three species of worms; viz. *Distoma mesostomum*, *Tænia angulata*, and *Ascaris lancea*; the two latter I have often found in the adult thrush, and my object now was to look for them in the bird in ovo. The nest of a thrush, accessible to observation, was easily found. During the first few days I contented myself with examining the nest occasionally only, but for some days previous to the time at which I hoped they would break the shell, I watched them more narrowly, and on examining the nest one morning found one of the birds just liberated from its prison.

I took the remainder, broke the shells, and found in all the young, numbers of pieces of *Teniae*, although I looked in vain for the other species; viz. the *Ascaris* and *Distoma*. The *Teniae* were so completely enveloped in the thick mucus contained in the intestines, that they would certainly have eluded my observation had I not diffused the contents of the canal in clear water. I am not aware that this fact has been noticed before; if any of your readers are aware of similar cases, they would confer a benefit upon science by publishing them. I doubt not but that it is universal, and that if sufficient care is exercised in making the investigation, that they will be found in every instance. I intend, at a future time, if leisure and opportunity permit, to pursue the inquiry further, and to examine at what earliest period of foetal life worms can be detected; but I think enough has been already adduced to prove the fallacy of the hypothesis which refers their existence to an external source. And here the question rests at present. And is it not far better that, in the absence of facts, the question should be thus suspended, than that a hasty inference should be formed which future observations may invalidate? If, then, they are innate, whence do they originate? Are they transmitted to the foetus through the medium of the male or female parent? I am constrained to the belief that this is not probable. I shall examine into the possibility of communication by the male parent, more for the sake of avoiding a charge of partiality than for any other reason. A few words, however, will suffice, as it is above all other theories most foreign to the truth, and is now hardly supported by any one. The male parent does indeed vivify the germ of the future offspring, and as it were impart to it a spark of the quickening fire; but it is on the mother that the vivified germ depends for all its growth and development. The ova of amphibious animals, fishes, &c. are deposited by the female parent, and are subsequently called into life by the contact of the male fluid; nor, indeed, does actual coition take place in the majority of animals. Whether these ova absorb the seminal particles or not, is a question which I cannot solve; but the experiments of Spallanzani prove that the infinitesimal portion of semen is sufficient for fecundation. Having diffused three grains of frog's semen in two pounds of common water, he found that every particle of the water possessed the fecundating power; for on applying a

little of this water to the eggs with a camel-hair pencil, they were rendered equally fruitful with those which had been fecundated in the usual manner. So, in other animals, we are not ignorant of the means by which generation is effected; and in these a very small portion of semen only is conveyed to the ovaries during coition. And when conception has taken place, we observe that the ovum is latent during the first few days, that it then appears very small, and at a later period becomes an evident embryo. These facts being established, we think that the opposite proposition is proved, viz. "the *Entozoa* cannot be transferred to the ovules by means of the male parent;" for who would contend for the possibility of the eggs of worms being contained in so small a quantity of semen? or how could the eggs of worms, infesting the different regions of the body, gain access to the seminal fluid of the parent? or supposing, for the sake of argument, that this is possible, how are the germs of animals to become the recipients of parasitical ovules of equal, perhaps superior, magnitude with themselves? If, in addition to this, we remember, that many of the *Entozoa* are viviparous, and that it is therefore physically impossible that their embryos can be contained in the semen of the parent, and that they can be thence transferred to the ova in the ovaries of the female; and with the knowledge that some worms (as the *Cysticerci*) are solitary, never copulate, and therefore produce no eggs, we shall be convinced of the falsity of this hypothesis; and it is unnecessary that I should give any further illustration of my opposing arguments. All the objections which are urged above apply with equal force to the following hypothesis, and those which I am about to oppose to the latter are equally fatal to the hypothesis just treated.

Are they communicated by the female parent?

That the ova of worms are communicated by mothers to their foetal young, is a theory which Vallisnieri, Goeze, Bloch, Werner, and nearly all helminthological authors, have warmly supported, and pronounced indubitable.

Those authors, indeed, who have been sensible of the difficulties which surround this hypothesis, have *not* pronounced it indubitable, but have rather embraced it as the most probable, seeing that all the other theories are untenable, and fall short of solving the difficulty; but I think they cannot have deeply examined the nature of it. I find it surrounded with

insurmountable objections, which I should like briefly to notice in this place.

If it be true that mothers communicate worms to their foetuses, they must nourish in their own bodies all the species of worms communicable. Let us see if this is probable.

There are twelve species of worms, if not more, known to infest man. These are—1. *Filaria medinensis*. 2. *Hamularia lymphatica*. 3. *Trichocephalus*. 4. *Ascaris lumbricoides*. 5. *Strongylus gigas*. 6. *Bothriocephalus*. 7. *Distoma hepaticum*. 8. *Polystoma pinguicola*. 9. *Tænia lata*. 10. *Tænia solium*. 11. *Cysticercus*. 12. *Echinococcus*. We find in the horse nine distinct worms; namely—1. *Filaria*. 2. *Oxyuris*. 3. *Ascaris*. 4. *Strongylus gigas*. 5. *S. armatus*. 6. *Distoma*. 7. *Tænia perfoliata*. 8. *T. plicata*. 9. *Cysticercus*. In *Colymbus Septentrionalis* there are seven: *Strongylus*; two species of *Ascaris*; *Distoma*; *Amphistoma*; two species of *Bothriocephalus*. In *Rana temporaria* as many: two species of *Ascaris*; *Strongylus*; *Echinorhynchus*; *Distoma*; *Amphistoma*; *Polystoma*. A similar number infest *Gasterosteus aculeatus*: *Ascaris*; *Echinorhynchus*; *Monostoma*; *Distoma*; *Tricuspidaria*; *Bothriocephalus*; and *Tænia*. It is needless to cite more examples. Now it has never occurred to any one to find in one subject all the species of worms peculiar to a certain animal. No woman was ever infested with the twelve species of worms above enumerated, and no individual mare ever contained the nine species of worms which have been found in the horse; and so of the rest. Some species of worms are exceedingly rare. The *Cysticercus*, for instance, is by no means frequently found in man or in the horse; indeed, some had doubted its existence altogether in the horse, till it was found by Chabertus. It is characterised by a long attenuated caudal vesicle. The *Echinococcus* is observed but rarely in man; it may be found, perhaps, in one or two instances in many thousands. The *Tænia* themselves, one species at least, are rare in certain situations; the *T. lata* is rarely found with us.

Now if, after a lapse of ten generations, or more, a very rare species of worm should be found in a descendant of this stock, we must conceive the eggs to have been transmitted by all the female parents, and to have been eventually deposited in this solitary individual, which, in my opinion, is to conceive an absurdity.

It is preposterous to tell us that the germs of the *Entozoa* (than which nothing is more delicate) are thus preserved for centuries, transferred from one generation to another; and it is equally incredible that the germs (in each generation equally exposed to circumstances favourable to their development) should, as it were by choice, select this particular individual for their nidus.

We know of no means by which the ovules of worms can be carried first into the uterus or ovaries of the female parent, and secondly from thence into the foetus.

Even supposing that all parasitical worms are produced from eggs, still I cannot conceive any method by which they can be transferred to the uterus or ovary of the female, or from them to the contained foetus or germ. As worms exist in every region of the body, it is indispensable that their eggs should first be absorbed by the lymphatics, thence carried into the veins, pass with the blood through the lungs, and through the arteries, before they can be deposited in the ovary or uterus ; and when (after this perilous journey) they shall have arrived so near the place of their destination, they have to pass through the vessels of the placenta. But throwing out of the question the dangers attendant upon such an expedition, there are two powerful objections to this finely-spun theory ; first, the trunks of the vessels, arterial as well as venous, both those concerned in nutrition and secretion, are attenuated to that degree that they become colourless, and refuse to transmit red globules ; and, secondly, we should have every part of the system abounding with the eggs of worms.

The first consideration does clearly point out the fallacy of the hypothesis, for globules of blood are infinitely smaller than the eggs of worms, and those vessels which will not transmit the former will undoubtedly reject the latter ; and I am not now making the comparison with the eggs of the larger species, such as those of *Ascaris lumbricoides*, *Strongylus gigas*, *Echinorhynchus*, or *Tænia*, but with those of the smaller species, such as the *Distoma trichocephalus*, and such like ; and I am well convinced that no *Entozoon* could be mentioned, whose eggs would not each be capable of containing many globules of blood. I would now call the attention of the reader to the vessels which by means of their minute radicles absorb the different fluids. Their mouths are invisible to the

naked eye, and the orifices of the tumid extremities of the villi of the intestines, called by Lieberkuhn *ampulla*, are more imaginary than real ; but, independently of this, the villi of the intestines are wanting in by far the majority of animals, so that in these absorption is carried on through excessively fine pores, in a natural state quite incapable of transmitting the eggs of worms. For a similar reason, the nutrient and secreting vessels distributed to the uterus, &c. are incapable of depositing eggs by their minute radieles. The same objection is afforded by an examination of the ultimate branches of the pulmonary vessels, which form a net-work in the cells of the bronchi. It is true that they carry red blood ; but would *their* calibre admit the eggs of the larger worms—those of the *Lumbric* worm for instance ? I have no hesitation in saying, that one ovule of the *Ascaris lumbricoides* would conceal many of the minute pulmonary vessels. A considerable time ago, Werner made an arithmetical calculation, in which he estimated the ovules of worms to be so diminutive as to allow of their passing readily from one body to another with the sanguineous globules ; in fact, that it was possible for them to be transported from the uterus to the most remote parts of the foetal body. If, instead of an arithmetical computation, this great naturalist had instituted a comparison of the relative dimensions of these ovules and globules as seen under the microscope, he would have arrived at a very different conclusion. Rudolphi has compared the ovules of *Ascaris labiata* and *Distoma polymorphum* of the eel with globules of blood procured from a small wound made in his own finger, both being placed under the microscope. Globules of blood appeared exceedingly minute when placed by the side of these ovules, although the worms are not large. An ovule of the *Ascaris*, indeed, exceeded a globule in diameter by ten or twenty times. Let us, then, be careful how we admit an hypothesis which, like this, is so encumbered with inconsistencies. It is impossible that such ova can traverse those vessels which are subservient to nutrition, and it is certain that the red globules do not. I think that enough has been said to prove the falsity of this theory ; but if another argument is wanting, we possess it in the fact, that if the ovules are carried to the uterus and ovaries through the medium of the absorbent and sanguiferous systems, we must assume that every part of the body abounds

with them ; this being assumed, by far the greater portion of them must either perish, or by an *error loci*, be deposited in uncongenial situations, and fail in reaching the place of their destination. The loss which the ovules would sustain in thus being whirled round in the circulating torrent is prodigious and inconceivable. In no microscopic examination either of the minute vessels or their contained fluids have parasitical ovules been discovered—

“Transeat cum ceteris.”

Are the ovules transferable from the uterus or ovaries to the foetus ?

All the difficulties inseparable from the preceding arguments apply with increased force when brought to bear on this question. Granting that the ovules are in fact brought together in the embryo, to conceive a process by which they are to be deposited in the different situations they are destined to occupy in the embryo bids defiance to the powers of human imagination. In the livers of the foetal lambs the *Distoma hepaticum* has been found. The ovules of these, therefore, to be transferred from the uterus to the foetus, must have passed through the absorbent vessels, the arteries and the veins, and from these into the vena portæ and pori biliarii !! How improbable ! We have to contend with a greater difficulty, when we remember that many occupy the brain and other inaccessible situations ; and still a greater presents itself when we call to mind that the ovules are propelled to every part of the body, until they attain a congenial settlement, which some of them (as before mentioned) could not have attained till after the lapse of several generations.

The obstacles are equally great if it be said that the eggs of worms are communicated from the mother to her offspring by the milk, or by any other means.

The doubts which I have thrown on this theory, in its application to man and the larger *Mammalia*, become increased when applied to the rest. By far the majority of the foetal *Mammalia* undergo protracted utero-gestation, and then commence lactation ; in a few, the family *Didelphida* for instance, the young resort to the mammae in a very tender state. Those authors who have been made sensible of the difficulties attendant on the transportation of the ovules from

the uterus and the ovaries to the foetus, have conceived it possible that the ovules are imbibed by the young with the maternal milk. But worms have been observed in the foetus, and cannot therefore have received them from this source. Many infants are entirely deprived of the breast, and if the ovules are communicated to the infant by its mother's milk, the eggs of all the species must, of necessity, be transferred to the mammae; the minute structure of the vessels of these organs, as of the uterus, &c. before alluded to, forbids such an event.

With respect to birds, it was the opinion of Werner that the ovules were communicated to the young by the beaks of their parents; that the food, after remaining for a certain time in the crop, became saturated with the fluids of the body, and charged with parasitical germs, and that in this way they found a ready entrance into the bodies of the young birds.

But to this may be objected, that there are many birds who do not feed their young with food laid up in the crop. But, as far as I have observed, those which are furnished with a crop are particularly free from worms, nor have I read any thing to the contrary. And if worms or their eggs are conveyed thither, we should have one or other of the *Strongyli* among their number; the eggs of the other worms then arrive at the crop by the same avenues as those by which they reach the uterus and mammae in the *Mammalia*.

If this theory be examined in its bearing upon the fishes, the objections will be found still greater. Werner believed that the worms or their ovules would find ready access to the bodies of young fishes, from the fact that they receive their nourishment in the same fluid in which the adult fishes deposit their excrement.

Plausible as this may appear, I believe it to be altogether an unsatisfactory explanation. We must not forget that a very large proportion of the parasitical worms infesting fish do not reside in the intestinal canal, but that they occur either free or enclosed in cysts in the liver, in the abdominal cavity, and in the muscles; therefore the ovules of these cannot be ejected with the excrement, and, of consequence, they are not swallowed by the young fish.

We do not find ourselves extricated from the difficulties, when we turn to the *Amphibia* and *Insecta*, for here the eggs

committed to the charge of the female are often hatched without her care, knowledge, or superintendence; and to suppose that their parasitical inhabitants are derived from eggs transmitted to them by the parent, is a figment of the imagination. This hypothesis is inapplicable, and disproved in the case of viviparous worms.

I mentioned in an early part of my paper, that in some of the worms no genital apparatus nor ova are manifest; these, therefore, being solitary, and enclosed in a cyst, do not seem to propagate, and here the hypothesis is overturned, seeing that they are not transferable. But as the ovules and genital apparatus, even in these, may really have existence, although not manifest, I will not lay much stress upon this, but pass over it in silence.

But there are *Entozoa*, and not a few, who actually do bring forth living young; and that these young are transferred by the absorbents and blood vessels to the uterus and ovaries in the *Mammalia*, or in the case of *Amphibia* and fishes, that they insinuate themselves into the ova, is a position which no man would contend for, or judge probable, however biassed by prejudice or enamoured of theory he may be. The argument is, in my humble estimation, convincing and unanswerable; for even supposing that the germs of these viviparous worms were prematurely born, (that is, before the contained animals were endowed with life,) and were in this state deposited and carried into the circulating current; even supposing this, I say, a proof would yet be wanting that such an abortion could be afterwards vivified.

We are now brought to the conclusion—that the eggs of worms are not communicated to infants and foetuses, either by the male or female parent; that it is as false and irrational to imagine that they have been transmitted from generation to generation, from the primordial parents either of man or other animals, as to suppose that they have been carried into the body from an extrinsic source.

The reader is, I doubt not, by this time sensible of the great difficulties with which this problem is beset, and must perceive that if my positions be true, viz. that worms do not gain access to animals by the mucous cavities, nor are they transmitted by the parents, to their young, that the doctrine of spontaneous generation is inevitable. But as this is a doctrine inconsistent

with reason and analogy, the question, as I before hinted, must be left, *sub judice*, until future facts and observations shall discover the truth.

Guy's Hospital, 12th month, 1835.

ART. XXXVI.—*Notes on the Genus Aphis.* By FRANCIS WALKER.

LATREILLE separated the genus *Aphis*, Linn. into three divisions, which he thus characterised :—

- I.—Abdomen bicorniculatum. Antennæ setaceæ, elongatæ.
- II.—Abdomen bituberculatum. Antennæ sæpe filiformes.
- III.—Abdomen corniculis tuberculis que nullis. Antennæ filiformes, breves ; corpus in multis tomentosum ; insecta sæpius in gallis improprie dictis degentia.

Lachnus, Illiger, comprises the second division, and the genera *Myzoxyle*, Blot, and *Phylloxera*, Fonscolombe, probably belong to the third, which Burmeister describes as *Chermes*, Linn.

Aphis.—This genus is still very extensive, and in some instances includes two distinct species, that feed on the same plant, so that a subdivision is required to avoid confusion, for most species are as yet only described by the names of the plants which they infest.

I. Horns of the abdomen very short, body generally small and narrow. Among the species of this division are :—

1. *Aphis* of the lime.—The prettiest species of the genus, is found in all stages of growth under the leaves of lime trees, during the summer and autumn. When full grown it is bright yellow or green, the scutel and sides of the head and thorax are black, and two rows of black spots extend along the sides of the abdomen ; the antennæ have alternate rings of yellow and black ; the hind thighs are black ; the wings white, spotted with brown at the tips of the nervures, the costa also brown. The young ones are entirely pale green and semi-pellucid.

2. *Aphis* of the oak.—It is a small delicate green species, having sometimes, but very rarely, a bright yellow hue ; the

joints of the antennæ and the horns of the abdomen are tipped with brown or black ; the latter are very short; the feet also are brown, the wings colourless, with a broad pale green fore border, the nervures usually varied with black. It is found in June beneath oak leaves, and has some likeness to the lime *Aphis*, but the larger size, gayer colours, and embroidered wings of the latter easily distinguish it.

3. *Aphis* of the hazel.—This also is a very pretty species. The body, antennæ, legs, and wings have a pale lemon colour ; the eyes, the feet, and a dot on the fore border of each upper wing are brown. It is rather larger than the preceding, and is found in June beneath the leaves of the hazel.

II. Horns of the abdomen long, body generally broader and more convex. The nervures of the wings are variable in some species.

1. *Aphis* of the cabbage.—Very abundant in all stages of growth beneath cabbage leaves in August. It is thickly clothed with white down.

2. *Aphis* of the white water-lily.—Found in August on the flowers of that plant. When full grown it is entirely black, and has limpid wings with green nervures ; the young ones are paler.

3. *Aphis* of the cherry.—It swarms in May beneath the leaves of cherry trees, which it causes to curl up and become covered with a glutinous matter. It has a dull red colour when very young, but on arriving at maturity it becomes black and shining, with the tibiae and third joint of the antennæ white. The body is broader and more convex than that of most of the genus. The wings are alike in colour to those of the preceding species, but the arrangement of their nervures differs.

Lachnus. Some of the larger species of this genus have the penultimate nervure of the upper wing subdivided. They usually inhabit the trunks and young shoots of trees, and among them are *Aphis piceæ*, Fabr., *A. quercus*, Linn. and *A. pini*, Linn. On a warm cloudless morning in October I saw myriads of *Scatopse picea* hovering about and settling on a larch tree, near Dolgelly, North Wales ; and among them were two or three *Scatopse flavicollis*. They came to feast on the honey distilled by a colony of *Aphides* that infested a branch of that tree. These latter were of all sizes ; the young ones greenish brown, the full grown deep brown, and speckled

with white. They were rather darker than *Aphis pini*, but probably not a distinct species. The smaller species have the penultimate nervure of the upper wing simply bifurcate, and inhabit the leaves of plants, &c. One very minute species is found in company with the *Aphis* of the oak described above. It is dull brown, oval, very flat, the wings limpid, and crossed horizontally over the abdomen, the costa pale green, the nervures darker.

ART. XXXVII.—*Varieties.*

11.—*The Glow-worm.*

PERCHANCE there 're many insect tribes
That hum within thy glow,
A little world ! illumin'd far
Beyon'd their weal or woe.

And thou, to them a mighty sun
The centre of a sphere !
What time thou closest up thy beams
May close their rolling year.

But when next eve thy glory wakes,
Again their joys may rise ;
Another spring again return,
With new espangled skies,
As now ;—the dew-drops twinkling round,
All sportive in thy ray,
A gorgeous kingdom, wondrous fair !
An elegant display.

But oh ! how transient thy sweet beam,
How soon thy ray expires !
Thy love-lit system fades away,
And yields to other fires.

Then shall the hare-bell's music sweet
That lulls thee to repose,
Be tuned to sadness, as it waves
To each soft wind that blows.

Then shall the corn-convolvulus,
Which shuns the blaze of noon,
That oft is courted by thy smile,
To grace thy rich saloon,

Feel most severe thy beams decay,
 His tendril cease to twine,
 Relax'd and feeble shall it lay,
 And speedily decline.

The rustling heath which blooms around,
 Shall bow its purple head,
 The ferns, and all the mosses near,
 That form thy silvery bed,

Shall droop, and silently deplore,
 For mirth shall cease to be ;—
 No insect with his busy hum,—
 For all will die with thee.

G. SHOVE.

12. *Colias Electra* and *Hyale*.—The appearance of these butterflies in the vicinity of London is so unusual as to be worth recording. They frequent the blossom of lucerne in preference to that of any other plant, and both species were to be met with on fine days from the 16th to the end of August, wherever a patch of lucerne was in fine blossom. At Deptford, Newcross, and along the Kent-road, of *Colias electra* twenty-seven specimens were taken, and of *C. hyale* thirty-four, principally by Mr. Ardly, of Rotherhithe, a collector, who catches them for sale; but I had the good fortune to take nine of each species myself.

Deptford.

EDWARD NEWMAN.

13. *Colias Hyale*.—A single specimen has been taken this autumn by a lady near Ross (Herefordshire).

London.

G. TRUSTED.

14. *Colias Europome*.—A pair of this fine species of butterfly, precisely resembling those in the cabinet of Mr. Stephens, are in the possession of Mr. Edmonds, of Worcester. I examined them closely, and find they have all the appearance of British insects as regards the pins, the mode of setting, &c. Mr. Edmonds assured me they were both taken on the south coast of England, but he could not tell me the exact spot without a reference to the captor. Mr. Edwards tells me, that neither this species nor *Hyale* have ever occurred to his knowledge in the neighbourhood of Worcester.

Deptford.

EDWARD NEWMAN.

15. *Mancipium Daplidice*.—Sir,—It may not be uninteresting to entomologists to be informed, that three specimens of this very scarce insect have been captured at Dover during the present month. Two of these I was so fortunate as to take myself, on the 20th, in the field adjoining the Castle Meadow. The other was secured by Mr. Leplastrier, jun., of Dover, on the 18th, in the Castle Meadow.

One of the specimens taken by myself (a male) is in the most perfect condition; the other (a female) is slightly worn. The one taken by Mr. L. is a very fine specimen, but has one of the lower wings a little torn.

Until the present year, one only of these insects has, I believe, been taken in the same locality since that mentioned by Mr. Stephens. It was taken by a son of Mr. Leplastrier, about ten years since, and is now in the possession of Mr. L.

Doctors' Commons, August 31, 1835. N. B. ENGLEHEART.

16. *Colias Hyale*.—About twenty specimens of *Colias hyale* have also been taken at Dover, between the 17th and 21st of this month. Out of six of these, which were captured by myself, five are white, and I believe that not more than six or seven of the whole number are yellow.

A white specimen, which was secured by Mr. Leplastrier, has the black spots on the upper wings lozenge shaped, with the angles very sharply defined. N. B. ENGLEHEART.

Doctors' Commons, August 31, 1835.

17. *Hipparchia Cassiope*.—On the 4th of July last, I found this species in considerable abundance in the vicinity of Sprinkling and Sty Head tarns, at the head of Borrowdale. The female appears to be rare, and the few that I captured were much wasted, although many of the males were still in fine order.

T. C. HEYSHAM.

Carlisle.

18. *Deilephila Galii*.—Two specimens of this fine sphinx were taken in a garden not far from the village of Cumwheaton, in the beginning of September, 1835, and which are the only specimens I have seen that have been captured in the vicinity of Carlisle.

T. C. HEYSHAM.

Carlisle.

19. *Papilio Podalirius*.—A friend of mine, who resides near York, informed me, a few days ago, that he this summer purchased a pair of *Papilio Podalirius* from a dealer at Portsmouth, who assures him that they were this year taken in the New Forest and brought to him alive. My friend, at the time, was perfectly aware that the best informed entomologists have great doubt whether this fine *Papilio* has ever yet been really captured in England, and consequently took considerable pains to ascertain the truth of the dealer's information; and from all he could learn he appears to be of the opinion that his testimony is worthy of credit.

T. C. HEYSHAM.

Carlisle.

20. *Cimbex femorata*.—Specimens of this rare insect, both male and female, have been captured in this vicinity during the past summer.

T. C. HEYSHAM.

Carlisle.

21. *Captures at, or near Worcester, in 1835*.—*Vanessa Antiopa* and *Colias electra* were taken together in August, at Henwick-hill, by a countryman. *Deilephila Galii* in July. *Thyatira Batis*.—This hitherto rare insect was taken plentifully this year in May and June, in Nunnery Wood, and Trench Wood. *Polyommatus Acis* has occurred in this neighbourhood plentifully, and *P. Corydon* also in abundance; the latter insect has never before been seen here.

RICHARDS.

Worcester, 13th Nov. 1835.

22. *Deilephila Galii*.—A specimen of this fine *sphinx* has been taken this summer, by Mr. Lees, in the Isle of Wight, and another by myself, in July last, on the London-road, Worcester. *Sphinx convolvuli* was taken here in September, 1834. *Communicated to E. Newman by*

Worcester, Nov. 1835.

A. EDMONDS.

23. *Sphinx Convolvuli*.—A fine specimen of this insect flew into the dwelling house of Mr. —, of High-street, Deptford, on the 14th September last, and occasioned no small alarm. The ladies had called in several neighbours, to consult on the best mode of getting rid of him; and amongst them, an acquaintance of mine, who with considerable activity captured

the intruder under a tumbler, and brought him to me in triumph, amid the fears, wonders, and shrieks of the assembled spectators, who considered the deed the most presumptuous they had ever witnessed, and evidently expected some sudden evil to befall the perpetrator.

E. N. D.

24. *Longevity of a Spider*.—“A lady to whom I am indebted for several interesting facts in natural history, states that two spiders have been in possession of two webs on opposite sides of a large drawer for thirteen years. This drawer has for that period of time been used exclusively as a repository for soap and candles, and has always been kept closed and locked, except when opened to put in or take out those articles. The spiders are constantly in the same position, in a hole in the inner corner of their webs, and seldom show more of themselves than their two fore legs projecting outwards.”—*Jesse's Gleanings, Third Series*.

25. *Earwigs turn to Flies!*—Sir,—The increased taste for the study of natural history which is now apparent in this country, is, I believe with reason, in part ascribed to the numerous *popular* works on that branch of science which are daily issuing from the press. How desirable, therefore, is it that these works, which unfold to us the mysteries of nature divested of the dry technicalities of science, should, at the same time, be free from errors. I am led to this remark from having observed, with considerable regret, in a work which I am sure every one must read at once with pleasure and instruction, a statement so erroneous as to mislead those unacquainted with the facts of the case, and to induce those who really understand the subject to look with ridicule on an otherwise interesting and valuable work. I allude to Jesse's Gleanings in Natural History, a work which, from the abundance of curious matter it contains, and the kindly feeling in which it is written, must, I think, be a general favourite. Judge, then, of my astonishment, when, on taking up the other day, the third series, at page 149, I found the following extraordinary paragraph:—

“ Earwigs turn to flies. This may easily be ascertained by developing one, after killing it, with a pointed penknife. The swallow-like tail will be discovered to be two terminations of wings.”

With all the esteem I felt for the amiable author, this

passage struck me as so utterly ridiculous, that I laid down the book, and have never since looked into it. I could point out some other errors, but as they do not belong to your branch of natural history, I will not take up your time with them. Do not misunderstand me. I have no objection to *popular* books on natural history, but rather approve of them. At the same time I wish them to be written in common sense.

Yours, &c.

W. CHRISTY, JUN.

26. *Larva of Megatoma serra*.—Sir,—Since I forwarded to you the descriptions of Coleopterous Larvæ, I have reared some more specimens of *Megatoma serra*, the pupa of which is remarkable, assuming that state (as many of the *Diptera* do) within the case of the larva; but it may be observed that, in this instance the larva case is slightly open at the back: the pupa in other respects resembles that of other *Coleoptera*.

GEORGE R. WATERHOUSE.

27. *Agriotypus armatus*.—The female of this insect was observed, in June last, on the banks of the Clyde, at New Lanark, Scotland, to descend the sides of rocks to a considerable depth under the surface of the water, remain immersed for ten minutes and upwards, and then reappear without any apparent injury: this singular operation it repeated several times. Can the object of these subaqueous wanderings be for the purpose of depositing its eggs in the aquatic larva of some Neuropterous insect?

ED.

28. *Notes on some Insects of Teneriffe*.—The volcano of Teneriffe forms five successive zones, each of which produces a distinct race of plants, and consequently of insects. The first zone is the region of pines, the next that of laurels; these are followed by the district of pines, of mountain broom, and of grass; the whole covering the declivity of the peak to the perpendicular height of 11,000 feet. Some insects collected in Teneriffe by J. Anstice, Esq. offer forms belonging to each zone, together with some peculiar to the salt deserts and borders of the sea. Among these are, *Ocyphus morosus*, Dejean. A little smaller than *O. olens*, but with no other

difference—*Cercyon scitum*^a—*Aphodius fortunatus*.^b Allied to *A. rufescens*, but narrower, smaller, and darker, the thorax more finely punctured, the clypeus black, &c.—*Pimelia radula*, Dej.—*Opatrium tomentosum*? Dej. A species allied to *Philax*, &c.—*Herpysticus laeticollis*, Germar.—*Chrysomela sanguinolenta*, or it may be a distinct species, the fore wings more coarsely punctured, and of a coppery violet colour.—*Bembex*, n. s.?—*Ammophila*, n. s.? clothed with silvery down, allied to *A. argentea*, Kirby, but more slender, and the red colour extending over a larger part of the abdomen.—*Anthophora*, n. s.?—*Bombus*, n. s.?—The universal *Cynthia cardui*.—*Polyommatus*, n. s.? nearly allied to *P. Acis*.—*Plusia*, n. s.? with gilded wings allied to *chrysitis*, *aurifera*, *aurichalcea*, *bractea*, &c.—*Eristalis taphicus*, Wiedenmann, who describes it as an Egyptian insect. It is very like *E. æneus*, but rather slenderer, the stripes on the thorax are less distinct, and the fore and middle tibiae are for the most part yellow.—*Jalla smaragdula*, Fabr. The above insects were presented to me by Wilson Saunders, Esq.

F. WALKER.

29. *Nest of one the fossorial Hymenoptera*.—A few days back, as I was walking round one of our fields, I happened to cut off a branch of elder which projected from the hedge; I noticed that the pith of it was removed, and on examining it, I found that some insect had evidently entered at the top of the branch, which had apparently been broken off some time previous. The pith she must have removed, for the whole length, about eighteen inches, was divided into little cells, in each of which was an oval cocoon, of a brown colour, containing a whitish larva. From the many fragments of legs, wings, &c. of *Diptera* in the cells, these larvae evidently belong to some one of the fossorial *Hymenoptera*. I think that Reaumur mentions a similar nidus in a dead branch of oak.

EDWARD DOUBLEDAY.

Epping, Dec. 1st.

^a *Cercyon scitum*, n. s. *Atrum*, *subtus piceum*, *Sphaeridii magnitudine et statura*: *antennæ rufæ*: *pedes et trophi rufo-picei*: *proalæ subtilissime punctato striatæ*. (Corp. long. lin. 2½; lat. lin. 1½.)

^b *Aphodius fortunatus*, n. s. *Piceus*, *nitens*, *fere glaber*: *caput et thorax supra atra*, *subtilissime punctata*; *hujus margines fulvi*: *proalæ fulvæ*, *subtilissime punctato-striatæ*: *palpi, antennæ, abdomen et tarsi rufo-picea*. (Corp. long. lin. 2½.)

30. *Galleria cereana*.—I could have wished to have sent you a little history of *Galleria cereana*, which most sadly annoys a relation of mine, who is an apiarian. He has burnt all fragments of comb where there were traces of them, searched out every hole and corner of his apiary, and apparently got rid of the *dirum tineæ genus*, as the auteur sans défaut calls them. But no such thing.

“Duris ut ilex tonsa bipennibus
Nigræ feraci frondis in Alrido
Per damna, per cædes ab ipso
Dicit opes animumque ferro.
Non Hydra—

But stop, I am getting into the style of Señor Tomas de la Fuente, or Padre Isla's friar, for which Corderius Secundus has so quizzed me.

Well then, to come back to the *tineæ*. This year he sent me a cigar box full of comb and larvæ. They spin, as you perhaps know, all the fragments of the comb into a mass impenetrable to the poor bees, who, being imprisoned, of course die in double quick time. The comb was soon almost entirely devoured, and replaced by the cocoons which the larvæ spun. From this mass I had about three hundred, if not more, moths. I distributed near two hundred specimens among entomologists, and have still many by me; but such lots came out that I got tired of setting them, so I gave them to my brother's nightingales:

EDWARD DOUBLEDAY.

31. *Medeterus loripes*.—The *Medeterus*, which you pronounce to be *loripes*, attracted my attention one fine day last spring, as I was walking in the woods here. It was flying in circles just above the water, in an old gravel pit, occasionally darting down to the surface of the water. On watching awhile I found that the object of its attack were some very small *Thysanura*, which, from their agility, it seemed to have much trouble in capturing. However it at last secured one, and whilst sucking this I caught it.

EDWARD DOUBLEDAY.

32. *Phytomyza flava*.—I received this insect from my relation Mr. L. Squire, as he has just commenced the study of

insects. He mentioned to me, amongst other matters on this subject, that the leaves of the *Scolopendrium vulgare*, near Falmouth, were very generally attacked by some subcutaneous larvæ, which he believed to be Dipterous. I wished him to inquire more into it, and some time after received the specimen I sent you, which was the only one he had succeeded in raising.

EDWARD DOUBLEDAY.

33. *Aphis Persicæ*.—M. Morren has presented a memoir on this insect to the Academie Royale des Sciences of Brussels. It was borne in a hurricane over many parts of Belgium, during the autumn of 1834. The emigration appeared to commence between Bruges and Gand, and from this place, as a centre, extended to the north-east and south. A single individual is able to produce 10,000 as early as the second generation. The female has an ovary of eight *ovi* or *fætigerens* sheaths, according to the season. These sheaths have each three or four apartments, where the young are gradually developed. When in the egg state they are seen in the terminating apartments. M. Morren believes that there is an individualization of organized matter in this and allied species. The saccharine matter is the nourishment of the young ones in their earliest stage of being, so that the insect may be called one of the *Mammalia*.

34. *Vanessa Antiopa*, &c.—*Antiopa* was seen by the Rev. F. Lockey, about two miles on the London side of Epping in September last. *Megachile Leachiella* has been taken this year in Heinault Forest, on the authority of Mr. Shuckard; *Sparasion frontale*, *Scelio rugosulus* and *Brachygaster minutus* in the New Forest, by the Rev. G. T. Rudd: also *Sapyga crassicornis* and *Hypophlaeus castaneus*, near Nottingham, by Mr. R. Bakewell. J. F. STEPHENS.

Camberwell, Nov. 30, 1835.

35. *Melolontha fullo*.—My friend John Ray has presented me with a fine female of this insect, which he took this year on the top of the cliff close by Margate, on the 26th of July.

Epping, Nov. 25, 1835.

EDWARD DOUBLEDAY.

36. *Splinx Galii*.—I took a specimen of this insect in the Priory Gardens at Warwick, on the 29th of August of the

present year ; it was hovering swiftly round some flowers in the hot house. When I returned to Warwick from town I found that another specimen had been taken by an entomological friend of mine, but not in the same gardens.

Hay, Dec. 8, 1835.

W.M. ENOCK, JUN.

37. *Papilio Podalirius*.—I have heard that an authentic British specimen of this insect exists in a cabinet at Warwick, and that it has this year appeared in the New Forest.

E. N. D.

38. *Capture of Colias Hyale*.—On the 20th August, I took three specimens of *Colias hyale*, (males,) two much torn, the other in fine condition, in the same locality, near Mickleham, Surrey; and on the same day last year on which I captured a pair of these, and a single specimen of *Argynnis Lathonia*. I was down there twice before, viz. 4th and 16th, and once afterwards, without seeing a specimen. W.M. BENNETT.

*48, Cannon-street,
9th of 12th month, 1835.*

39. *Capture of Sphinx Colvolvuli, &c. at Leominster*.—A remarkably large specimen of *Sphinx convolvuli* was taken, about six weeks ago, on the palings of a pig-stye adjoining a farmhouse at Kimbolton. *Macroglossa stellatarum* appeared here about the third week in June, and continued for about a month : its appearance and disappearance does not seem to depend on the blossoming of any particular plant ; it has never been observed here at any other time than as above named, although I recollect reading in the Magazine, that it is common near London all the year. *Catocala nupta* has been unusually abundant here this autumn. I never had seen but a single living specimen at Leominster previously to this year ; but this year you could not go into the Midsummer Meadows without seeing them flying, even in the middle of the day, about the pollard willows : they were also frequent on the trunks and on palings in a state of repose. *Mormo maura* has appeared in equal abundance. This insect was also formerly rare. *Vanessa C. album* has been most abundant through out the autumn. A larva of *Acherontia atropos* has been found this year. A perfect insect was taken here three years ago.

Leominster, Nov. 30, 1835.

GEORGE NEWMAN, JUN.

THE
ENTOMOLOGICAL MAGAZINE.

APRIL, 1836.

ART. XXXVIII.—*Travels through North and South Carolina, Georgia, East and West Florida, &c.* By WILLIAM BARTRAM. Philadelphia: James and Johnson. 1791. London: Johnson, 1792.

THAT period in the life of a book at which it becomes secure from the critic's pen has not, we believe, been accurately defined: we think fifty years a good ripe age for a book of any kind; and, venerating age as we do, we should perhaps be inclined to deal leniently with any work that approached that period of its existence. We find also that it is not at all times expedient to criticise too freely those who are still in the field, and common honesty demands that we should not praise where no praise is due.

“Si malus est liber
Nequeo laudare et poscere.”

From honest William Bartram, “peace be with him!” we fear no revenge; of him we may speak as we please, and he will not answer us; but this will be no inducement for us to be severe. We may just remark, that his entomological nomenclature is by no means unexceptionable, but we must in fairness add, that he is generally careful to include it in parenthesis, as though himself aware of its possible incorrectness. It is as a lover of nature, as an observer and describer, that we admire William Bartram, and we shall attempt to extract the essence of those flowers of description which he has so liberally strewn throughout his work.

" This world, as a glorious apartment of the boundless palace of the Sovereign Creator, is furnished with an infinite variety of animated scenes, inexpressibly beautiful and pleasing, equally free to the inspection and enjoyment of all his creatures ; " and William Bartram seems to have been one whose whole soul was wrapt in the excitement of continued " inspection and enjoyment." No hardships, nor labours, nor privations, could tame his ardour ; no danger could daunt his courage ; he wrapped himself in his blanket, and slept the peaceful sleep of infancy in the primeval forests of America, undisturbed by the incessant howling of the wolves and roaring of alligators.

" The evening," says Bartram, " was temperately cool and calm. The crocodiles began to roar and to appear in uncommon numbers along the shores and in the river. I fixed my camp in an open plain near the utmost projection of the promontory, under the shelter of a large live oak, which stood on the highest part of the ground, and but a few yards from my boat. From this open high situation I had a free prospect of the river, which was a matter of no trivial consideration to me, having good reason to dread the subtle attacks of the alligators who were crowding about my harbour. Having collected a good quantity of wood, for the purpose of keeping up a light and smoke during the night, I began to think of preparing my supper, when, upon examining my stores, I found but a scanty provision ; I therefore determined, as the most expeditious way of supplying my necessities, to take my bob and try for some trout. About one hundred yards above my harbour began a cove or bay of the river, out of which opened a large lagoon. The mouth or entrance to it was narrow, but the waters soon after spread and formed a little lake, extending into the marshes ; its entrance, and shores within, I observed to be verged with floating lawns of *Pistia*, *Nymphaea*, and other aquatic plants, and these I knew to be excellent haunts for trout.

" The verges and islets of the lagoon were elegantly embellished with flowering plants and shrubs. The laughing coots, with wings half spread, were tripping over the little coves, and hiding themselves in the tufts of long grass ; young broods of the painted summer teal skimming the still surface of the water, and following the watchful parent, unconscious of danger, were frequently surprised by the voracious trout."

There ! reader, is not that a pretty picture—what signifies it that it was written fifty years ago ? What signifies it that now a rail-road, or a canal, may pass through the very spot, this picture of the lagoon is as fresh as on the day when it was painted ; but hist ! something disturbs the face of the still lagoon ! an immense alligator rushes from the flags, which surround the margin, towards its centre. “ His enormous body swells. His plaited tail is brandished on high above the lake. The waters descend like a cataract from his opening jaws. Clouds of smoke issue from his expanded nostrils. The earth trembles with the thunder of his roaring. From the opposite shore emerges his rival ; they dart upon each other ; the surface of the lake boils with the conflict ; now they sink to the bottom folded in horrid wreaths ; the water is discoloured and dark ; again they rise, their jaws clapping together echo through the deep surrounding forest ; again they sink, and the contest ends at the muddy bottom of the lake.” The vanquished then sneaks off, but the victor, exulting, returns to the surface. “ The shores and forests resound his dreadful roar.”

It was amusing enough, no doubt, to our traveller to witness *this* combat, but he was in a short time engaged in one still more personally interesting. “ I went on board, and penetrating the first line of those [alligators] which surrounded my harbour, they gave way ; but, being pursued by several very large ones, I kept strictly on the watch, and paddled with all my might towards the entrance of the lagoon, hoping to be sheltered there from the multitude of my assailants, but ere I had half way reached the place I was attacked on all sides, several endeavouring to overset the canoe. My situation became precarious : two very large ones attacked me at the same instant, rushing up with their heads and part of their bodies above water, roaring terribly, and belching floods of water over me. They struck their jaws together so close to my ears as almost to stun me, and I expected every moment to be dragged out of the boat and instantly devoured, but I applied my club so effectually about me, although at random, that I was so successful as to beat them off a little.” As soon as our traveller had succeeded in thus gaining a temporary respite, he made for the shore as fast as possible, and gained it in safety. This, to a common man, would have been adventure enough, but Bartram was not satisfied without catching the

supper of fish on which he had set his mind. After a short time, paddled his boat again to the middle of the lagoon, caught a handsome dish of trout, and a second time returned to the shore. As he was preparing the fish for supper, he looked up and saw a gigantic alligator coming from the water, and preparing to spring at him; he instantly drew back, and the disappointed monster retreated, sweeping several of the captured fish into the water by the flourish of his tail.

But the grandest scene is yet to come: "How," says Bartram, "shall I express myself so as to convey an adequate idea of it to my readers, and at the same time avoid raising suspicions of my veracity? The river, in this place, from shore to shore, and perhaps nearly half a mile above and below me, appeared to be one solid bank of fish of various kinds, pushing through the narrow pass of St. Juan's into the little lake on their return down the river, and the alligators followed them in such incredible numbers, and so close together from shore to shore, that it would have been easy to have walked across on their heads had the animals been harmless. What expressions can sufficiently declare the shocking scene that for some minutes continued, whilst this mighty army of fish were forcing the pass? Thousands, I may say hundreds of thousands of them, were caught and swallowed by the devouring alligators. I saw an alligator take up several great fish at a time out of the water, and just squeeze them between his jaws, while their tails flapped about his ears and eyes ere he could swallow them. The horrid noise of their closing jaws, their plunging amid the broken banks of fish, and rising with their prey some feet upright above the water, the floods of blood and water rushing from their mouths, and the clouds of vapour issuing from their wide nostrils, were truly frightful."

We seriously recommend the *Floridas* to the attention of our valued friend, the author of the Letters of Delta; we particularly call his attention to "Crocodile Lick," as we presume the spot in question is now named. It is all very well for him to talk of the wonders of South America, but here we have a plain simple history by a man of strict veracity, an humble-minded Quaker, employed by the late Dr. Fothergill, of London, to collect facts in natural history in this unexplored region. Waterton the Wanderer has been disbelieved because he states a few particulars about a solitary cayman,

and Delta is in a fever to get a peep at some other solitary cayman, or, perchance, the ghost of the very cayman on which Waterton rode; let him go to " Crocodile Lick," cross rivers on a bridge of crocodiles, and then let him write Delta papers of what he has done, not of what he will do.

The range of our imagination, wide though it be, presents us with no picture half so interesting as the learned Delta, rigged in full entomological apparel, his wide white hat literally blazing with impaled butterflies—the gorgeous butterflies of the tropics—his right hand waving his net high above his head, his left ever and anon extended to preserve his balance, and his feet cautiously picking their way across the mighty streams of America coolly tripping, "with light fantastic toe," from head to head of the terrific alligators, while millions of these enraged and giant saurians half blinded him with their cloudy breath—half drowned him with deluges of water ejected from their maws—half deprived him of hearing by the incessant thunder of their roaring.

Let us pass from *Crustacea* to *Arachnoida*. Strictly speaking, or rather to make our review strictly entomological, we will suppose the crocodile a crustaceous animal, his shelly skin clearly evinces a relationship to the ——— ; but we are not now on system, we merely signify to our readers that we choose to call the crocodile crustaceous. Now we will go on with the spider.

"As I was gathering," says our author, "specimens of flowers from the shrubs, I was greatly surprised by the sudden appearance of a remarkably large spider on a leaf; at sight of me he boldly faced about, and raised himself up as if ready to spring upon me; his body was about the size of a pigeon's egg, of a buff colour, and, together with his legs, was covered with short silky hair; on the top of his abdomen was a round red spot encircled with black. After I had recovered from the surprise, and seeing that the wary hunter had retired under cover, I drew near again, and presently discovered that I had disturbed him on a predatory expedition against the insect tribes. I was therefore determined to watch his proceedings. I soon observed that the object of his wishes was a large fat humble bee, that was visiting the flowers and piercing their nectariferous tubes. The cunning intrepid hunter concealed his approaches with the circumspection and perseverance of a

Siminole when hunting a deer, advancing with slow steps, obliquely, and under cover of dense foliage, and behind the limbs, and when the bee was engaged in probing a flower he would leap nearer, and again instantly retire out of sight, under a leaf or behind a branch, at the same time keeping a sharp eye on me. When he had gotten within two feet of his prey, and the bee was intent on sipping the delicious nectar of a flower, with his back next the spider, he instantly sprang upon him, grasping him over the back and shoulders, and both disappeared. I expected the bee had carried off the spider, but I soon saw them, both together, suspended by a strong elastic thread, which the spider had fixed to the twig from which he leaped on the bee. The rapidity of the bee's wing, as he endeavoured to extricate himself, made them both together look like a moving vapour, until the bee became wearied with whirling; in a quarter of an hour he was completely exhausted by his struggles and the wounds of the butcher, became motionless, and expired in the arms of the devouring spider, who, ascending the rope with his game, retired to feast on it under cover of the leaves."

Now, if it please thee, gentle reader, we will exhibit a scene of peace; the roar of the alligator shall not be heard, the cruelty of the spider shall not be seen, but all shall be sunshine, flowers, and butterflies. "I continued along the beach about a quarter of a mile, and came to a forest of *Agave vivipara*, the scapes or flowering stems of which rose to the height of thirty feet, the tops regularly branched in the form of a pyramidal tree, the plants very near each other, and covering a space of several acres. When the seeds of this plant are ripe they vegetate, and grow on the branches until the scape dies, when the young plants fall to the ground, take root, and fix themselves in the sand: the plants grow to a prodigious size before the scape shoots up from the centre. Having contemplated this admirable grove, I proceeded towards the banks of the river, and though it was now late in December, the aromatic groves were in full bloom. The broad-leaved *Myrtus*, *Erythrina corallodendrum*, *Cactus cochinellifer*, *Cacalia suffruticosa*, and particularly *Rhizophora conjugata*, which stood close to and in the salt waters of the river, were covered with beautiful white sweet-scented flowers, which attracted to them two or three species of very beautiful butterflies, one of

which was black, the upper pair of wings very long and narrow, marked with transverse stripes of pale yellow, with some spots of a crimson colour near the body." This must be one of the *Heliconians*. "Another species, remarkable for splendour, was of a larger size; the wings were undulated and obtusely crenated round their ends, the nether pair terminating near the body in a narrow forked tail, the ground colour was light yellow, &c." This was, probably, *Papilio Ajax*. "But those which were most numerous were as white as snow, their wings large, their ends lightly crenated and ciliated with a cluster of little brilliant orbs of blue and crimson on the nether wings near the body. Their numbers were incredible; multitudinous as were the flowers, there was not a flower for each butterfly, and clouds of them continued hovering over the mellifluous groves."

That is a December view. Our reader will recollect we quoted, a few months back, Washington Irving's account of the progress which the honey bee was making westward; the same fact is proved by Bartram's statement. In conversation with a Dr. Grant, in company with whom he happened for a short time to travel, Bartram inquired how it was that, westward, among the Creek Indians, he had seen no bees? Dr. Grant replied that there were few or none west of the Isthmus of Florida, and but one hive in Mobile, which was lately brought from Europe, the English supposing there were none in the country, not finding any when they took possession after the Spanish and French. "I have," continues our traveller, "been assured by the traders, that there are no bees in West Florida, which, to me, seems extraordinary and almost incredible, since they are so numerous all along the eastern coast, from Nova Scotia to East Florida, even in the wild forests, as to be thought, by the generality of the inhabitants, aborigines of this continent." Our author also witnessed and enjoyed a bee hunt. "On our way," says he, "we discovered a bee-tree, which we cut down, and regaled ourselves with delicious honey, leaving one of our companions to protect the remainder until our return with a tub to collect it and carry it with us; and, in the evening, we all returned safe with our sweet booty to the trading-house." At the present time, the honey bee is abundant throughout the United States, both as a denizen of the forest and a dependant on man. Generally

speaking, the settler in the back-woods prefers the precarious but luscious supply afforded by those swarms which have deserted man, and taken up their abode in fissures of rocks or hollows of trees, to the more regular but less abundant supply from hives of his own.

Horse - biting flies seem, in the district through which our author travelled, to have been excessively numerous and annoying. We unhesitatingly pronounce these dreadful scourges to belong to the natural order *Tabanites*. A strange confusion appears to have existed on this subject, solely owing, in our opinion, to a very useless desire to make the terms used by Virgil, who was a poet and an observer of nature, but no entomologist, agree with those of Linnæus, who was an observer and an entomologist, but no poet. Our friend, Bracy Clark, and the learned author of the *Horæ Entomologice*, amused the entomological public with a warm and learned controversy on the subject. The matter is this—there are three distinct orders of flies, whose names and histories have been mingled and confused.

Tabanites, which suck the blood of horses and cattle.

Asilites, which prey solely on insects.

Estrites, which feed not at all in the perfect state, but whose larvæ feed in the stomachs, under the skins, or in the frontal sinuses of horses and cattle.

Now, Virgil distinctly states that the same animal was called by the name of *Asilus* by the Romans, and *Œstrus* by the Greeks; thus, of course, making these terms no more than synonyms; but Linnæus, the scientific nomenclator, was no party to this. We beg pardon, we are so apt to wander—where were we? “ These biting flies are of several species, and their numbers incredible. We travelled, almost from sun-rise to sun-set, amidst a flying host of these persecuting spirits, who formed a vast cloud around our caravan so thick as to obscure every distant object; but our van always bore the brunt of the conflict; the heads, necks, and shoulders of the leading horses were continually in a gore of blood; some of the flies were nearly as large as humble bees. They are armed with a strong, sharp beak or proboscis, shaped like a lancet, and sheathed in thin flexible valves; with this beak they instantly pierce the veins of the creatures, making a large orifice, from whence the blood springs in large drops, rolling down as tears, causing a

fierce pain, or aching, for a considerable time after the wound is made." This must be *Tabanus*. "There are three or four species of less size, but equally vexatious, as they are vastly more numerous, active, and sanguinary, particularly one about half the size of the first-mentioned, of a dusky colour, with a green head." Unquestionably *Hæmatopota*. "Another, yet somewhat less, of a splendid green, with the head of a gold colour; the sting of this is intolerable, no less acute than a prick from a red-hot needle, or a spark of fire on the skin: these are called burning flies. Besides the preceding tormentors, there are three or four species of smaller biting flies; one of a dusky grey colour, another much of the same colour, with spotted wings and a green head, and another very small and perfectly black; this last species lies in ambush in shrubby thickets and cane brakes, near the water. Whenever we approached the cool shades, near creeks, impatient for repose and relief, almost sinking from persecutions from these evil spirits, who continually followed and surrounded us over the burning ridges and plains, and entertained hopes of peace and quietness under the cool and humid groves, then we were surprised by clouds of these last-named persecuting demons, of musquitos, and of gnats."

One of the finest passages in this delightful book is about *Ephemeræ*, but it is too long to quote. The author traces their history from the egg placed floating on the surface of the water, through its long approach to maturity, until—the creature of a day—it bursts from its confinement, and makes the air its home. "Solemnly and slowly move onwards to the river shore, the rustling clouds of the *Ephemeræ*. How awful the procession! innumerable millions of winged beings, voluntarily verging on to destruction, to the brink of the grave, where they behold bands of their enemies with wide open jaws ready to receive them. But, as if insensible of the danger, gay and tranquil, each meets in the still air his beloved mate, inimitably decked in new nuptial robes. What eye can trace them in their varied wanton amorous chases, bounding and fluttering on the odiferous air! With what peace, love, and joy, do they end the last moments of their existence!"

The description of the *Cactus opuntia*, and its inhabitant the *Coccus cacti*, the valuable cochineal of commerce, is worth transcribing. "The *Cactus opuntia* is very tall, erect,

and large, and strong enough to bear the weight of a man; some are seven or eight feet high: the whole plant seems to be formed of great oval, compressed leaves, or articulations; those near the earth continually increase, magnify, and indurate, as the tree advances in years, and at length lose the bright green colour and glossy surface which they promised in their youth, acquiring a ligneous quality, with a whitish scabrous cortex. Every part of the plant is nearly destitute of aculei, or those fascicles of barbs, which are in such plenty on the common dwarf Indian fig. The cochineal insects were feeding on the leaves. The female of this insect is very large and fleshy, covered with a fine white silk or cottony web, which always feels moist or dewy, and seems designed by nature to protect them from the violent heat of the sun. The males are very small in comparison to the females, and are very few in number; each has two oblong pellucid wings. The large polypetalous flowers of the *Cactus* are produced on the edges of the last year's leaves, are of a splendid yellow colour, and are succeeded by very large pear-shaped fruit, of a dark livid purple when ripe: its pulp is charged with a juice of a fine transparent crimson colour, and has a cool pleasant taste, somewhat like that of a pomegranate."

Within the last fifty years, cultivation has widely altered the face of the country; throughout the United States the hand of man has been busy, the "eternal" forests have yielded, throughout extensive tracts, to the flame and axe; but still North America is a country of great and increasing interest to the naturalist. The botanist may still delight his eye with surveying forests of *Magnolia*, acres of *Yucca gloriosa*, and thousands of acres of *Rhododendra*, *Azaleæ*, and *Kalmiæ*, presenting an uninterrupted sheet of bloom far as the eye can reach, in every direction. The giant alligator still abounds in that "father of waters," the Mississippi, and may be frequently seen basking on its surface like a floating log, although a thousand steam-boats are working on its waves. It was but the other day one of these huge reptiles entered the log-cabin of a "squatter," devoured five children and their mother, while the father hardly escaped with life through the window of the cabin.

It is to the entomologist that the Southern States of America offer the greatest attraction; from one peep at Abbott's

"Insects of Georgia," he may be sure of being rewarded. Throughout these sunny regions there is still sufficient forest to preserve every species in almost its pristine abundance, while the dangers and the labours of the naturalist are comparatively trifling. The brilliant *Pyrophori* seem to illuminate the night almost throughout the continent; from New Orleans to Quebec, there is scarcely a locality in which we have not evidence of their presence, but it is in the Southern State of North America that they are most numerous and brilliant. In the gem-like *Buprestites*, and the more brilliant butterflies, perhaps these states can scarcely rival the Brazils; yet so immense has been the importation from the latter country, that the Floridas and Carolinas promise infinitely more of novelty, and, in every respect, appear to us to offer greater inducements to the explorer.

The climate, as a previous quotation has shown, is quite tropical. Through the whole tract of country, stretching coastward, to New Orleans, the orange, wherever cultivated, bears abundantly, and is loaded, even at mid-winter, with ripe and golden fruit, and this season seems better adapted to the European constitution than the more intense heats of summer, and promises an almost equally abundant harvest to the enterprising entomologist.

ART. XXXIX.—*Appendix to Captain Sir John Ross's Narrative of his Second Voyage, &c.* London : Webster. 1835.

THE universal interest which the achievements of Captain Ross have excited, is sufficient apology for an introduction of his name into a Magazine of this kind; but, in the volume before us, there is so complete and excellent an account of Boothian zoology that we conceive it would be nothing less than a dereliction of duty were we to pass it by unnoticed. Captain J. Clark Ross, the nephew and companion of the dauntless adventurer under whose command the expedition was undertaken, being a competent naturalist, has drawn up that portion of the volume which relates to zoology; and of this account we have attempted to give a mere outline. In the list, it will be observed, there

are nineteen species of Mammalia, and of these twelve are terrestrial and seven aquatic. There are forty-one birds, of which nineteen are terrestrial, and twenty-two aquatic. The number of fishes is fifteen. There is no mention of Batrachian or Saurian reptile. There are thirty-six insects; of these, one is a beetle, one earwig, four ichneumons, one ant, three bees, one stone-fly, six butterflies, eight moths, two plant bugs, four gnats, and five flies. The Crustacea are sixteen in number, and the Mollusca five. In the list it will be found there is a total absence of quadrumanous, feline, insectivorous, and edentate mammalia, and of xygodactyle birds; among the insects there is only one example of *Coleoptera*, one of *Orthoptera*, two of *Hemiptera*, and one of *Neuroptera*. The only new forms that occur are among the *Crustacea*; in these we have two genera, which we have not previously met with. Both of the new names given have been previously employed in entomology, so that they must fall, and others be instituted in their stead. The portion of the work which relates to entomology is illustrated by three highly finished and accurate copper-plate engravings, one of which, containing fifteen figures of insects, is elegantly coloured. There are, moreover, numerous portraits of the natives of Boothia, drawn on stone, and accurately coloured.

Catalogue of Animals described by Captain J. C. Ross as Natives of Boothia.

MAMMALIOUS ANIMALS.

<i>Ursus maritimus,</i>	Polar bear
<i>Gulo luscus,</i>	wolverine
<i>Mustela Erminea,</i>	ermine
<i>Canis lupus occiden-</i>	American wolf
<i>talis,</i>	
<i>lagopus,</i>	Arctic fox
<i>Vir. $\beta.$ fuliginosus</i>	
<i>Arvicola Hudsonia,</i>	Hudson's Bay Lemming
<i>trimucronata,</i>	Buck's Lemming
<i>Arctomys Parryi,</i>	Parry's marmot
<i>Lepus glacialis,</i>	Polar hare
<i>Cervus tarandus,</i>	reindeer
<i>Ovibos moschatus,</i>	musk ox
<i>Phoca foetida,</i>	rough seal
<i>Greenlandica,</i>	harp seal
<i>Barbata,</i>	great seal
<i>Trichechus rosmarus,</i>	Walrus
<i>Delphinapterus beluga,</i>	white whale
<i>Monodon Monoceros,</i>	norwhal
<i>Balaena mysticetus,</i>	black whale

BIRDS.

<i>Falco Islandicus,</i>	jerfalcon
<i>Strix Nyctea,</i>	snowy owl
<i>Alanda cornuta,</i>	shore lark
<i>Sylvia Enanthe,</i>	wheatear

BIRDS continued.

<i>Emberiza nivalis,</i>	snow bunting
<i>Plectrophanes lapponica,</i>	Lapland Finch
<i>Corvus corax,</i>	raven
<i>Tetrao lagopus mutus,</i>	Ptarmigan
<i>saliceti,</i>	willow grouse
<i>rupestris,</i>	rock grouse
<i>Columba migratoria,</i>	passenger pigeon
<i>Charadrius semipal-</i>	
<i>matus,</i>	American ring plover
<i>pluvialis,</i>	golden plover
<i>Vanellus melanogaster,</i>	grey lapwing
<i>Strepsilas interpres,</i>	turnstone
<i>Grus Canadensis,</i>	brown crane
<i>Tringa maritima,</i>	purple sandpiper
<i>alpina,</i>	American dunlin
<i>Phalaropus fulicarius,</i>	flat-billed phalarope
<i>Sterna Arctica,</i>	Arctic tern
<i>Larus glaucus,</i>	glaucous gull
<i>argentatus,</i>	black winged silvery
<i>leucopterus,</i>	gull
<i>eburneus,</i>	white winged silvery
<i>tridactylus,</i>	gull
<i>Rossii,</i>	ivory gull
<i>Sabini,</i>	kittiwake
	cuneate tailed gull
	fork tailed gull

BIRDS continued.

Lestrus pomarinus,	pomarine jager
parasiticus,	Arcctic jager
Procellaria glacialis,	fulmar petrel
Somateria spectabilis,	king duck
mollissima,	eagle duck
Heralda glacialis,	long tailed duck
Anser bernicla,	brent goose
Hutchinsii,	Lesser Canada goose
Columbus glacialis,	great northern diver
Arcticus,	blackthroated diver
septentrio-	redthroated diver
nalis,	Brunnich's guillemot
Uria Brunnichii,	black guillemot
Grylle,	
Alle,	little guillemot

FISHES.

Cyclopterus minutus	
Liparis communis	
Ophidium Parril	
viride	
Gadus morhua,	common cod fish
callarias	
Merlangus polaris	
Blennius polaris	
Cottus quadricornis	
polaris	
Pleuronectes hippo-	halibut
glossus,	
Salmo Rossii,	Ross's Arctic salmon
alipes,	long finned char
nitidus,	angmalook
Hoodii,	masamacush

INSECTS.

Colymbetes maestus,	[Dytiscites]
Forficula auricularia,	[common earwig]
Ichneumon larie,	[Ichneumonites]
Ephialtes,	[ditto]
Campoplex arcticus,	[ditto]
Microgaster unicolor,	[Brachionites]
Myrmica rubra,	[Formicites]
Bombus Kirbiellus,	[Apites]
polaris,	[ditto]
Arcticus,	[ditto]
Tinodes hirtipes,	[Phryganites]
Colias Boothii,	[Papilionites]
Chione,	[ditto]

INSECTS continued.

Hipparchia Rossii	[Papilionites]
subhyalina,	[ditto]
Melitaea Tarquinius,	[ditto]
Polyommatus Frank-	{ [ditto]
lini,	}
Laria Rossii,	[Arctictes]
Erypripa hyperborea,	[ditto]
Hadena Richardsoni,	[Noctuites]
Psychophora Sabini,	[Geometrites]
Orapora punctipes	
Orthotenia Bentleyana,	[Tortricites]
septentrionana,	[ditto]
Argyrotosa Parryana,	[ditto]
Acanthia stellata,	[Cincicites]
Pedetius variegatus,	[ditto]
Culex capsici,	[Culicites]
Chironomus polaris,	[ditto]
borealis,	[ditto]
Tipula Arctica,	[Tipulites]
Helophilus bilineatus,	[Helophilites]
Tachina hirta,	[Muscites]
Anthomyia dubia,	[ditto]
Scatophaga apicalis,	[Scatophagites]
fuscorum,	[ditto]

CRUSTACEOUS ANIMALS.

Crangon Boreas,	[Polar shrimp]
Sabinea septemcarinata	
Hippolyte aculeata	
Sowerbii	
borealis	
potaxis	
Mysis flexuosa	
Themisto Gaudichandii	
Gammaurus nugax	
ampulla	
boreus	
loricatus	
Sabini	
Amphithoe Edwardsii	
Acanthonotus cristatus	
Acanthosoma hystrix	

MOLLUSCOUS ANIMALS.

Rossia palpebrosa	
Clio borealis	
Limacina Arctica	
Bothnia reniformis	
Cystingia Griffisi	

Polar Bear.—Our author mentions that, during their stay at Fury Beach, many of these animals came about them, which they killed. Some, tempted by the fine appearance of the meat, made a hearty meal of the first that was shot. All who partook complained of violent headache, which, with some, continued two or three days, and was followed by the skin pealing off the face, hands, and arms.

Wolverine.—At Victoria Harbour, two or three months before the ship was abandoned, they were surprised by a visit from one of these animals; it climbed the snow wall and came boldly on deck, where the crew were walking for exercise. He seized on a canister with some meat in it, and feasted so

ravenously, that he allowed our author to slip a noose over his head, by which he was secured.

Wolf.—They are extremely troublesome to the Esquimaux. A single wolf will go amongst any number of Esquimaux dogs, and carry off one without any resistance on the part of the rest. These dogs have such an extreme dread of the wolf that they tremble and howl when aware of its approach.

Arctic Fox.—In July, 1831, one of their burrows was found on the margin of a lake: it had several passages opening into a common cell, beyond which was an inner cell, containing six young ones. In the outer cell and passages were great numbers of lemming, ermine, and the bones of hares, fish, and ducks. Four of the cubs were kept alive, and became very tame.

Hudson's Bay Lemming.—It has been found in the highest latitude yet reached: it congregates in the summer by the sea shores, and breeds among the loose stones: in the winter it constructs a nest of dry grass on the surface of the earth, beneath the snow, and makes numerous passages from its nest, by which it roams in search of food, seldom appearing above the snow; if it happens to venture out, it burrows in the snow with such rapidity on being disturbed, that it is seldom taken. Our author made a singular experiment on this animal. Having tamed one, and kept it in the cabin, he found it did not assume the usual coat of white, almost universally worn by the Arctic quadrupeds in winter; he therefore placed it on deck, in a temperature of thirty degrees below zero; in a single day the cheeks and a patch on each shoulder had become perfectly white. The following day the white had extended: the four following days it still continued increasing in white, and on the seventh day the animal was perfectly white, except a transverse mark on the shoulders, which was prolonged some way down the back, in the form of a saddle. On examining the fur, the white hairs were the longest, and were white at the tips only: on clipping it with scissars, it was as brown as before the change.

Polar Hare.—This animal is abundant in the polar regions, and appears to seek no shelter from the inclemency of the climate. It produces from four to eight young at a birth. If caught young, it is easily tamed: one taken in June became tame enough to eat from the hand in a few days. It preferred

to share the peas-soup, plum-pudding, bread, sugar, rice, and cheese, to the grass and herbs which had been prepared for it. It would not bear being caressed, but was fond of company ; would sit for hours and listen to conversation, and retire to his cabin when it was ended.

Musk Ox.—The dung of the musk ox is considered a delicacy by the natives !

Rough Seal.—This is a most valuable animal to the Esquimaux, and hunting it is one of his chief occupations, when all other animals have migrated southward to avoid the extreme cold. The Esquimaux thus traverses, with his dogs, the extensive floes of level ice until they scent the breathing holes of these seals. As soon as a hole is found, the Esquimaux builds a snow wall, to break the excessive keenness of the breeze ; he then waits in patience, with unlifted spear, till the seal rises to breathe, and smites him with unerring aim.

Fulmar Petrel.—This bird follows the whale-ships, availing itself of the labours of the fishermen, by feeding on the carcases of the whale, when stripped of their blubber. In return it is exceedingly useful to the whalers, by guiding them to the places where whales are most numerous, and crowding to the spots where they first appear on the surface of the water.

Ross's Arctic Salmon.—This and the three following species of salmon, are supposed by Dr. Richardson to be entirely new, and will be figured in the forthcoming part of his "Fauna Boreali-Americana." The length of this species is 34 inches ; of *S. alipes*, 24 inches ; of *S. nitidus*, 20 inches ; and of *S. Hoodii*, 21 inches.

Ichneumon Lariæ.—This beautiful ichneumon is figured of a bright red colour ; it was bred early in July, from the pupa of *Laria Rossii* : a second specimen was taken on the 8th of July.

Colias Chione.—A very remarkable looking butterfly, partaking very considerably of the appearance and colouring of the *Polyommati*. It appears in the middle of July, and frequents the flowers of *Oxytropis campestris*, and *Arctica*.

Melitæa Targinius.—Of this butterfly our author was fortunate enough to find the larva. The following is his description : it measured exactly an inch in length, by 0.22 of an inch in breadth ; it was composed of thirteen segments ; the first and last segments were furnished with two, the second and

twelfth with four, and the remainder with six spines, dispersed in rows and equidistant on each side the back. The colour was dark brown, with a line of white spots along each side. A caterpillar, found under a stone, in the middle of March, perfectly hard frozen, showed symptoms of life in half an hour after being brought into the cabin, and in less than an hour was walking about the table.

Laria Rossii.—The caterpillars of this moth were the subject of the following experiment. Thirty of them were put in a box, and exposed to the winter temperature for three months; on bringing them into the cabin, every one of them returned to life and walked about; they were again exposed to an atmosphere of forty degrees below zero, and instantly became refrozen: after a week, they were brought again into the cabin, and twenty-three returned to life: these were again exposed, refrozen, and, after being solid for another week, eleven of them revived on being brought into the cabin; a fourth time they were frozen, and two only recovered; of these two one produced a moth, the other six flies.

Culex capsius.—It appeared about the 10th of July, 15th became extremely numerous, and 22d so troublesome as to prevent the necessary duties of the ship. They were in perfect clouds over the marshes, and these larvæ constitute the principal food of the trout in the lakes.

Acanthonotus cristatus.—This is a new and most singular genus of *Crustacea Amphipoda*. It is nearly allied to *Talitrus* of Latreille, and was first discovered during Parry's second voyage, near the island of Igloolik. In the course of the present voyage a few specimens were taken at Felix Harbour. We subjoin the generic character. Antennæ of nearly equal length, four-jointed; the terminal joint consisting of very many rings; the third joint of the superior antennæ short; the four anterior feet monodactyle, filiform, having in the first four the terminal joint serrated; rostrum produced, acute, incurved.

Acanthosoma hystrix.—This is a still more singular animal than the preceding, and is very distinct from any thing we have seen. On each of the nine segments following the head are seven spines, forming seven longitudinal rows; there are two spines on the head, one on each side of the rostrum; on the tenth segment are five spines, and on the following one three only.

Rossia palpebrosa.—A new molluscous animal, described and figured by Mr. Owen in a manner that leaves nothing to be desired. The description has afforded us great pleasure; it is too long to extract, and too concise to abridge; we therefore entreat such of our readers as may possess a taste for anatomical detail to study the masterly production.

Limarina Arcticæ.—“ A very abundant species, peopling as it were the Polar seas, and constituting the chief source of subsistence to the Greenland whale. It is indeed most truly wonderful that so small and apparently insignificant an animal can be made to fulfil the most important purposes: from the smaller species of crustacea to the enormous whale all derive their food directly or indirectly from this little creature. It is, in fact to the inhabitants of the Arctic ocean what the vegetable kingdom is to the inhabitants of the land—the foundation of animal existence.”

We have no space for further notice of this interesting work; we can only by this slight sketch hold out the example of these accomplished and enterprising voyagers to those of our fellow-countrymen, who have fortune and leisure at their command.

E. N. D.

ART. XL.—*On the Husk, or Hoose in Cattle.* By GEORGE COLGATE.

(Addressed to the Editor of the Greenwich Gazette.)

SIR,—As you considered a former letter on the subject of this most extraordinary disease of sufficient importance for insertion, and as several other papers copied it into their columns, perhaps some further particulars attending it, which have come under my observation, may not be uninteresting to some of your readers, and may tend to afford or elicit from others additional information as to the cause and cure.

In that letter I stated that on examination of the weaning calves which had died, I found the disease to arise from worms in the windpipe and lungs; that it prevailed to a considerable

extent in the neighbourhood; that it appeared but little understood, and very difficult to cure; that having found lime would destroy the worms when taken out, I had in addition to several other remedies caused them to inhale the dust of fresh slaked lime, with (as I considered) a beneficial effect.

I have this autumn had another attack of the same disease among my cattle. It made its appearance about the same time as last year, but did not prove so fatal in its effects. The symptoms were precisely similar, being cough, with frothy discharge at the mouth, short breathing, weeping of the eyes, hanging of the head and ears, and continual inclination to rub the throat, either on the ground or over a rail or fence.

About a dozen of my cows and heifers have had it this year; my weaned calves were slightly affected, but all have recovered. The only remedies I applied this year were lime, by inhalation, and spirits of turpentine diluted and poured into the nostrils every other morning; but although I have taken considerable pains to ascertain the comparative merits of several remedies, particularly in the previous year, I am unable to speak confidently as to the effects of any of them—all I know is, that in 1834 fourteen died of the disease, and several others were so weakened and stunted from its effects, as to be worth only about half of what they would otherwise have been; and that in 1835, with similar treatment, all have recovered; and not only so, but when the disease goes off, those to which no remedy has been applied appear to recover as well as the others.

It may be worthy of remark, that the season in 1834 and 1835 were, in this part of the country, similar; both being dry summers, and moist growing autumns. The disease in both years came on about August, and went off in November. At one time I thought it contagious, but from all I have been able to observe myself, and learn from others, I am of opinion that it is epidemic, but not infectious—that the cause is in the state of the atmosphere, as with the cholera* and other epidemic diseases, and probably taken by inhalation.

Out of the fourteen which died in 1834, two or three which had been as bad as any, but had rather stronger constitutions, remained in a dwindling state for some weeks after the disease

* Dr. Jenkins, in his treatise on the cholera, remarks, that it rages most in seasons when the progress of vegetation is most rapid.

had gone off from the others, and on examination, when they died, the worms appeared to have either died, or to have left the lungs, but left them too much diseased and ulcerated for recovery; the head and throat of these were considerably swollen, similar to what is often in a sheep in the last stage of the rot.

At the time the disease was at its height in 1834, Mr. Brown, surgeon, of Lewisham, who happened then to be attending my family, took considerable interest in the progress of the disorder, and examined the lungs and windpipe of one that died. He found a few straggling worms in the upper part of the windpipe, enveloped in frothy matter; these appeared to have either crawled or to have been coughed up. At the lower part of the windpipe, and throughout the main air vessels of the lungs, were clusters of worms knit up together, sufficient in quantity to fill a common sized tea-spoon. The inner membrane, or lining, at the lower part of the windpipe was eaten away, and considerable appearance of inflammation in that part of the lobes of the lungs were partially ulcerated. To the naked eye the worms appeared to be a sort of ascarides, about as thick as common sewing thread, and from an inch to an inch and a half in length. On examining them with a microscope, with a strong light underneath, they appeared as large as a common eel, sufficiently transparent to observe the circulation of blood in their veins, and in shape pretty much like a leach. When first taken out they appear rather dormant, but warmth seemed to revive them. The animal from which they had been taken had been dead some five or six hours.

Mr. Brown appeared to doubt whether any remedies could be applied sufficiently strong to destroy the worms without danger of killing the animal, but recommended as an experiment, giving twenty grains of calomel, with a little scammony, and to make them inhale the gas made from muriatic acid, black oxide of manganese and vitriol, similar to that used in fumigating apartments to prevent infection in fevers, scarlatina, and other contagious diseases. These remedies I tried, but without any evident effect.

In my former letter I mentioned several remedies which had been recommended by veterinary authors and others; I will now enumerate some others which I have since met with—not so much from the proofs I have had of their efficacy, as for the

purpose of affording to the better judgment of others who may have their cattle affected with the disease, an opportunity of selecting such as they think proper.

Mr. Clater, of Retford, in his "Every Man his own Cattle Doctor," says, "the hoose or cough in cows and young cattle proceeds from taking cold, either after calving, or from being kept in a warm hovel, and afterwards exposed to the inclemency of the weather. The symptoms are, shortness of breath, continual motion to cough or hoose, difficulty of breathing, which seems to press hard upon the diaphragm and abdominal muscles;" and recommends the following drink:—Balsam of sulphur, two ounces; Barbadoes tar, one ounce; two eggs; ginger, aniseed, cummin, clecampane root, grains of paradise and liquorice root, each one ounce in powder; salt of tartar, half an ounce; honey, four ounces,—given in ale or gruel, with a glass of brandy.

Let this drink be given every other or third morning, for three or four times. If it be at the commencement of the disease one or two drinks are generally sufficient. When this disease is of long standing, it is seldom removed without first giving a purging drink of one pound of Epsom salts, two ounces of ginger, and a quarter of a pound of treacle.

The same author, speaking of the "hoose in calves," says— " This disease most commonly attacks young calves the first year, while at grass in the summer. In some dry summers it has carried off great numbers. Upon examination after death the author has frequently caused the gullets to be laid open, and found a bunch of worms netted or matted together. These by their constant tickling motion cause the young animal to be in a constant state of hoosing or coughing, by which the powers of digestion are so much injured as to render the chewing of the cud impracticable, and if proper measures are not applied, they languish and pine away like a consumptive patient. The following drink will be found effective in destroying these kind of vermin:—Wormwood and savin, each, two ounces; Indian pink, half an ounce: cut and bruise them small, and put them into a pitcher with a quart of boiling water*; cover them down and let stand till morning; strain them through a cloth, and add ginger in powder, half an ounce; aniseed, fresh powdered, two ounces; linseed oil, two table-spoonfuls; mix, and give it warm.

The calf must fast two hours before and two after the

drink. Repeat it every other or every third morning. This is a proper dose for a calf six or eight months old, and may be varied a little according to age and size, and continued for three weeks; then leave off a week and repeat it again, if the calf still remain unwell.

Worms in horned cattle are not very common except in the above cases. In many instances where calves have been so bad of this disease as to baffle the power of other medicines, it has instantly given way on their taking one table-spoonful of spirit of turpentine, without being mixed with any thing. It may be repeated every third morning for three times.

Now, by Mr. Clater's description of "opening the gullet," and the "powers of digestion being so much injured as to render the chewing of the cud impracticable, it appears to me that he found the worms in the ousing, or swallow, or passage to the stomach, and not to the windpipe or lungs—and the remedies, such as wormwood, savin, &c. are such as are generally used for destroying worms in the stomach and intestines; whereas, on examination of those that died of mine, and which was done very carefully in almost every case, the stomach itself, and the passage leading thereto, were perfectly healthy and free from any kind of worms, and their appetites and digestion continued good as long as they had strength to stand up to eat.

In a work of considerable note and talent, entitled "The Complete Grazier," this disease is described as follows:—"Cough—where calves are exposed at too early an age to all the vicissitudes of the weather, before they acquire sufficient strength to undergo the changes of this climate, they are liable to take frequent colds, the consequence of which is, a cough, that often proves fatal if neglected. For curing this malady it has been recommended to pour half a table-spoonful of spirit of turpentine into the calf's nostrils. The nose should be smeared with tar, and the animal kept within doors for a few hours, repeating this treatment as often as the cough becomes troublesome."

This work says nothing about worms, but treats of the disease merely as a common cold. Inhaling the fumes of burnt tar is also recommended.

Asafoetida is also strongly recommended. If in the gum, a quarter of an ounce dissolved in hot water, and given fasting,

repeated every other morning—or, which is by some thought preferable, equal proportions of asafoetida in solution, vinegar and aloes, poured into the nostrils.

The former of the two I tried pretty extensively without any apparent effect; the latter mode is said to be quite effectual, but it was only lately that I was told of it.

Mr. Green, of Westerham, had recourse to his old remedy—the juice of walnut leaves, in 1834, and found them again effectual.

If I have not already trespassed too much on your space, and on the patience of your readers, I will conclude by giving a brief account of an experimental operation performed by Mr. W. Morey, of Peckham, with complete success, and on whose skill in the performance I consider it reflects great credit. The case was this: a cow became choked, as it is termed, by part of a Swede turnip sticking in the throat; the common remedies (and which no cowkeeper should be without), choak-rope and probang, which are similar in effect, were both used, but to no purpose, as the obstruction was of such a shape that neither would remove it. The cow became hoven or blown, as is usually the case, by the constant efforts to swallow, and stabbing the side was had recourse to, which although rather formidable to appearance, is attended with little danger or inconvenience, and from neglect of which many an animal is lost, and which gave time for the operation, which was, to cut the throat open and take out the obstruction.

The outer aperture was sown up, and the cow kept upon gruel for a few days, after which she was turned out to grass. The only inconvenience which occurred was, that a portion of the food oozed out of the incision in the gullet, which was removed now and then by unsewing the throat. This was done two or three times, by which time it grew and closed up; and this inconvenience might not have occurred if the gruel diet had been longer continued. This occurred about last March, and I have the cow now perfectly sound.

I am, Sir, yours respectfully,

Lewisham, Nov. 24, 1835.

GEORGE COLGATE.

ART. XLI.—*An Epitome of the British Genera, in the Order Thysanoptera, with Indications of a few of the Species.* By A. H. HALIDAY, M. A.

ORDO.—THYSANOPTERA.

Metamorphosis semicompleta—*Ala quatuor subæquales, haud plicatæ nec reticulatæ; longè ciliatæ; anticæ firmiores.*—
Os, haustellum breve, deflexum, carnosum, siphona biseptum includens, palpisque 4 instructum.—*Tarsi apice vesiculosi, exungues.*

Gen. Thrips. . *Linnæus. De Geer. Geoffr. Fabr. &c.*

Physapus. De Geer. Act. Hohn.

Ordo Thripsites *Newman.*

Body elongate depressed, with the segments all inosculating by a broad surface. Head flat above, the face inclined backwards, the mouth descending under the propectus. The parts of the mouth are united to form a short conic sucker, more fleshy than horny, and not retractile. The labium, which composes the posterior half, has the three usual segments distinct, the *stipes* (*mentum*) being the longest, the *ligulae* shortest; the *palpi* are inserted in a narrow membranous space between these last. The *maxillæ* are flat, triangular, without division or articulation, their base coalescing with the scape of the labium, so that they have no free motion. A little beyond the middle and near the anterior edge are seated the palpi, which are longer than the labial pair. The maxillæ are applied to the edges of the labium, so that they almost meet at the point and enclose in front a triangular space occupied by the clypeus and labrum. The *clypeus* is transverse, but not symmetrical; being longer on the left side, its anterior line descending obliquely in that direction. The *labrum* seems to be wedge-shaped or triangular; (but I have scarcely yet separated it satisfactorily.) The *mandibles* are setaceous, with a bulbous base appearing close to the edge of the maxillæ, under which they dip immediately, becoming internal, and by their junction towards the tip forming a two-valved syphon. The compound eyes are lateral and separate. The antennæ longer than the head, of eight or nine joints, but sometimes seeming to have only five or six; filiform or capilla-

ceous, inserted on the advanced margin of the front, between the eyes. Simple eyes, usually three, placed in a triangle between the eyes, before the antennæ. The prothorax is a distinct, rather ample segment, with free motion; the propectus, deeply notched to admit the mouth. The pterothorax is composed of nearly equal segments, or the anterior smaller. The abdomen of ten segments, the 1st of which (*metapodeon*,—Newman,) is concealed below by the postpectus. Wings, usually four; linear, narrow, not folded nor reticulate; the nerves and margin fringed with long hairs, which diverging in flight, compensate for the smallness of the membrane. The upper pair are of stronger consistence, sometimes true elytra. The legs are short, each pair distant, the middle most, the hind pair least so. The feet two-jointed, with a vesicular tip, without claws. The larva resembles the perfect insect, but has a softer body, with the mesothorax and metathorax distinct: the mouth is almost alike, the antennæ and legs shorter; there are no simple eyes, and the compound are replaced by conglomerate eyes. The pupa resembles the perfect insect, but the articulations of the limbs are obscured by a film, and the wings enclosed in short fixed sheaths. The antennæ are turned back on the head, and the insect, though it moves about, is much more sluggish than in the other states.

In the first family the females are oviparous. I have neglected to observe whether it be the case in the others; but the structure of the borer leaves little doubt on this point. They feed on vegetable juices, and are often extremely injurious from their multitudes. It is probable that many of them have several broods in the year; indeed Passerini expressly asserts it. Others appear in the perfect state only for a short time, during the flowering season of a particular plant.

The order *Thysanoptera* seems sufficiently distinguished from *Hemiptera* by the distinct palpi and the broad *external* maxillæ; from *Orthoptera*, by the internal capillary mandibles, and the maxillæ, which are almost fixed, and have not the *galea*. The name proposed is taken from the plume-like fringes of the wings. From the way in which the alary segments are joined, there appears to be but one complete system of muscles for both pair of wings.

Synoptic View of the Families and Genera.

A. No borer in the female	Stirps et Fam.	I. TUBULIFERA.
		Gen. I. PHLÆOTHIRIPS.
AA. A 4-valved borer in the female	Stirps II.	TEREBRANTIA.
B. Borer curved downwards	Fam. II.	STENELYTRA.
C. Body reticulate	Gen. II.	HELIOTHIRIPS.
CC. Body smooth		
D. Abdomen tomentose	Gen. III.	SERICOTHRIPS.
DD. Body glabrous	Gen. IV.	THRIPS.
BB. Borer recurved	Fam. III.	COLEOPTRATA.
C. Nine distinct joints in the antennæ	Gen. V.	MELANTHIRIPS.
CC. Four last joints of antennæ minute and compact.	Gen. VI.	ÆLOTHRIPS.

Stirps et Fam.—TUBULIFERA.

Antennæ 8-articulatæ: palpi maxillares biarticulati, articulo 1^{mo}. perbrevi: alæ aveniæ membranaceæ, cruciato—incumbentes: terebra feminæ nulla: segmentum ultimum in mare et femina attenuatum, tubulosum.—Ambulant lentè.

GEN. I.—PHLÆOTHIRIPS.

Thrips spp. *De Geer. Fabr. Geoffr.*

Sect. AA. *Ocellis nullis nec alis,*

Sp. 1. *Phl. pedicularia.*

Chestnut-brown, the end of the abdomen ferruginous; the first three joints of the antennæ and the legs light ochre yellow, the thighs darker.

Sect. AA. *Ocellis 3, alis completis aut abbreviatis.*

Subs. B. *Capitis lateribus parallelis.*

Sp. 2. *Phl. aculeata.* Fem. *Nigra, antennis fere totis, tibiis anticis tarsisque albidis; femoribus anticis subæqualibus; corporis setis fuscis; elytris limpidis.*

Thrips aculeata. *Fabr. Syst. Rhyng.* 312. No. 1.

Distinguished from the rest by its long head and antennæ, slender fore thighs, and the dusky colour of the long hairs.

Varies (immature?) chestnut brown, with pale antennæ, shanks, and feet.

Sp. 3. *Phl. Ulmi. Piceo-nigra, antennarum articulo 3^{to}. toto sequentibus basi, flavo-pallidis; tibiis basi apiceque, anticis totis tarsisque ferrugineis; femoribus anticis incrassatis; police in utroque sexu distincto.*

Thrips ulmi . *Fabr. Syst. Rhyng.* 313. No. 5.

Thrips corticis *De Geer.* III. II. No. 3, Tab. I, fig. 8—12.

Thrips, &c. . *Geoffr.* I. 384, No. I. Tab. 7. fig. 6.

Var. a.—Alata, elytris subflavescensibus.

Var. β.—Subaptera.

Var. γ.—Subaptera fusco-castanea.

The male is much shorter than the female, with the fore thighs twice as large, and the thumb, or tooth, on the inside of the fore foot common to all of this genus, very thick. The larva is very flat, white; with the head, a cordate spot on the prothorax, the antennæ, (except the two basal joints,) and the last two segments of the abdomen, blackish.

Inhabits under the bark of old trees, feeding on mucor.

Sp. 4. Phl. flavipes. *Castanea, ano ferrugineo; antennis ante basin pedibusque flavo-ferrugineis, femoribus posterioribus basi fuscescentibus; femoribus anticis incrassatis; elytris subflavescensibus.*

Sp. 5. Phl. Statices. *Alata atra, antennis medio, tibiis anticis apice tarsisque fusco-pallidis; femoribus anticis incrassatis; police maris distincto, feminæ obsoleto.*

Antennæ short, thicker in the middle. Is always winged: the male shorter than the female; fore thighs twice as large, and the thumb distinct. The larva is less depressed than that of *Phl. Ulmi*; blood red, with the head, tail, antennæ, and legs shaded black. The blood of the perfect insect is red, like the larva. The egg is shaped like that of *Culex*, being cylindric, rounded at one end, and crowned with a knob at the other.

Inhabits the flowers of *Armeria maritima* in myriads. I have also found the larva on the same plant so early as March.

Subs. BB. *Capitis lateribus antrorsum convergentibus.*

Sp. 6. Phl. coriacea. *Capitis lateribus muricatis.*

The largest insect of the order. Pitchy black; the 2d and 3d joints of the antennæ, and the base of those which follow, the feet, fore shanks, and extremities of the others, pale yellow. The fore thighs thick. The hairs along the sides of the head spring from

a double row of sharp tubercles. Antennæ nearly as long as in *Phl. aculeata*.

Communicated by Mr. Walker.

Sp. 7. *Phl. annulicornis. Capitis lateribus inermibus.*

In the general proportions, intermediate between *Phl. Ulmi* and *Phl. Statices*. The antennæ shorter than in the former of these; the intermediate joints pale, but all tipped with brown; the fore shanks and the feet dull ferruginous; the fore thighs thick, and the thumb as in *Phl. Ulmi*, fem.

Stirps II.—TEREBRANTIA.

Antennæ pro typo 9-articulatæ: palpi maxillares 3-articulati: elytra parallela, suturâ rectâ juxtaposita, magis coriacea, nervis 3 longitudinalibus. Feminæ terebra compressa acuta 4-valvis, rimæ inferæ segmentorum 9^{ni.} et 10^{ni.} reposita: segmentum 8^{vum.} in eadem subtus bipartitum, in mare integrum. Saltant ab domine repercussso.

Fam. II.—STENELYTRA.

Palpi recti teretes: antennarum articuli 3 ultimi attenuati, sæpius connati, et alter aut omnes oblitterati: elytra angusta nervis longitudinalibus tantum; margine omni nervisque longè ciliatis: terebra feminæ decurva, ani ambitus inferus conformis (concavus.)

GEN. II.—HELIOTHRIPS.

Corpus reticulatum: collum incisum: antennæ apice capillaceæ: alæ angustissimæ, fere capillares.

Sp. 1. *Hel. Adonidum. Fem.*

Dusky black, the extremity of the abdomen ferruginous. Antennæ and legs white, the base and sixth joint of the former dusky. Wings almost hyaline. The body above is entirely netted with elevated lines, forming pretty regular hexagons, equal in size on the head, where they are largest, to those of the eyes, and disposed in perfect rows on the abdomen.

Inhabits flowers in hothouses. Communicated by F. Walker, Esq.

GEN. III.—SERICOTHrips.

Corpus lœve coriaceum, abdomen tomentoso, aro in mare et femina conformi conico: alæ abbreviate: caput ad oculos usque immersum: antennæ stylus brevis biarticulatus.

Sp. 1. Ser. staphyinus. Mas et Fem.

Opaque black, with the abdomen silky. Second and third joints of the antennæ and the legs, pale ferruginous; the base of the thighs dusky. Elytra round, shorter than the pterothorax, white, with the base blackish.

Inhabits the flowers of *Ulex Europaea* in plenty. Is excessively active in running and leaping.

GEN. IV.—THRIPS.

Corpus lœve aut subtiliter squameum, glabrum: caput pone oculos productum, collo non inciso.

Synoptic Table of Subgenera.

A. No simple eyes	Subg. III. APTINOTHrips.
AA. Three simple eyes.	
B. Prothorax in front produced, narrowed	Subg. I. CHIROTHERIPS.
BB. Prothorax of equal breadth.	
C. Last segment armed with 2 dorsal spines in female.	Subg. II. LIMOTHrips.
CC. Last segment unarmed.	
D. Style of antennæ longer than 6th joint.	Subg. V. BELOTHERIPS.
DD. Style shorter than 6th joint.	Subg. IV. THRIPS, propr.

Subgen. I.—CHIROTHERIPS.

Caput perparvum: prothorax antrorsum attenuatus: pedes antici perquam incrassati: antennæ breves compressæ, stylo biarticulato.

Sp. 1. Thr. Ch. manicata.

On spikes of grass.

Subgen. II.—LIMOTHrips.

Prothorax æquilatus: antennæ stylus biarticulatus, articulo 6to. brevior: ocelli tres: alæ feminæ completæ, maris nullæ. Feminæ segmenta posteriora spinosa.

Thrips spp. Auct.

Sp. 2. *Thr. L. denticornis.* Mas et Fem. *Antennæ articulo 3^{ti}. extrosum acuminato.*

Fore legs incrassate. The tip of the abdomen in the female has several spines, besides the stronger pair on the back of the last segment.

On heath and grass; but rare.

Sp. 3. *Thr. L. cerealium.* Mas et Fem. *Antennæ articulo 3^{to}. rotundato.*

^a *Thrips physapus.* *Kirby. Linn. Trans.* III. 242.

— *Vassalli-Eandi. Mem. Acad. Turin.* XVI. LXXVI.

The larva is yellow; the pupa paler, with long wing cases.

Exceedingly common on grass and *cerealia*. Mr. Kirby found them in the furrow of the grains of wheat. Earlier in the year Mr. Vassalli-Eandi detected them gnawing (as he expresses it, rather incorrectly, I think) the stems above the knots, and causing the abortion of the ear. It is at this period that their attacks are most mischievous. In the year 1805, one-third of the wheat crop, in the richest plains of Piedmont, is said to have been destroyed by this seemingly insignificant little insect. Whatever the causes may be which produce the alarming increase of these tribes, they appear to operate almost periodically, and over a wide space; for in the same year (1805) the wheat crops in England also suffered from a similar disease, as the communications in contemporary periodicals inform us.

Mr. Kirby was the first who observed that the male of this species is apterous.

I have found, within the stem-clasping leaves of *Elymus arcuarius*, some very small individuals, which may perhaps prove a distinct species.

Subgen. III.—APTINOTHrips.

Prothorax aequilatus: ocelli nulli nec alæ: antennæ articulus 6^{us}. apice attenuatus, absque stylo articulato.

Thrips spp. Gleichen (Gmelin.)

* Linnaeus says of *Thr. physapus*, "hæc forte—unde Secalis spicæ exinaniant;" the "perhaps" has disappeared in Gmelin's compilation.

By far the most abundant species, occurring on a great variety of flowers in our gardens throughout the year; appearing first in spring with the *Narcissi*; particularly fond of *Umbelliferæ*. The larva, which is yellow, I have found plentifully in the flowers of *Sinapis nigra*.

Sp. 12. *Thr. Cynorrhodi.* Mas et Fem.

Smaller and paler than the preceding: the style of the antennæ shorter.

Common in the flowers of wild roses.

Subs. CC. *Antennæ stylus perbrevis, articulis vix discretis.*

Subs. D. *Elytra fusca.*

Sp. 13. *Thr. grossulariæ.* Mas et Fem.

Common in the flowers of gooseberries in spring.

Sp. 14. *Thr. physapus.* Mas et Fem. *Nigra, antennis pallidis, basi apiceque summo fuscis; tibiis anticis tarsisque lutescentibus elytris fuscis.*

Thrips physapus . *Linn. Fna. S. 1027.*

A very distinct species, and uncommonly active in its movements.

The larva, in form, like that of *Thr. vulgatissima*, but deep orange red: the head, antennæ, and legs, variegated with blackish lines and rings.

Inhabits the flowers of *Cichoraceæ*. Linnaeus probably did not distinguish this species from *Thr. vulgatissima*, but his description of the larva belongs to *this*, with which the locality agrees.

Sp. 15. *Thr. fuscipennis.* Fem.

Common on *Rumex*, and other plants.

Sp. 16. *Thr. Ericæ.* Fem.

On heath and mountains.

DD. *Elytra testacea aut pallida.*

Sp. 17. *Thr. Urticæ.* Mas et Fem. *Schra. Beytr. 31. Tab. 1.*
fig. 25, 26.

Fabr. Syst. Rhyng. 313. No. 6.

Common in company with *Thr. vulgatissima*, but particularly attached to yellow flowers, as *Nasturtium*, *Thalictrum*,

Ranunculus, &c. in which I find along with it a yellow larva, like that of *Thr. vulgarissima*.

Sp. 18. *Thr. corymbiferarum*. Mas et Fem.

In the flowers of *Corymbiferæ*, with a white border, in the Botanical garden at Glassnevin, near Dublin.

Sp. 19. *Thr. minutissima*. *Linn. Fna. S.* No. 1028.

In company with *Thr. vulgarissima*, and not rare.

Sp. 20. *Thr. discolor*. Mas et Fem.

In flowers of *Cruciferae*, Glassnevin.

Sp. 21. *Thr. livida*.

In flowers of *Ulex Europæa*, very rare.

Subs. BB. *Elytra linearia, fasciata*.

Sp. 22. *Thr. Primulæ*. Mas et Fem.

Distinguished from the rest of this section by its small size and paler tints ; the style of the antennæ is filiform and biarticulate.

Inhabits the flowers of the primrose abundantly.

Sp. 23. *Thr. decora*. *Nigra, antennarum articulo 2^{do}. apice, 3^{ti}. toto, 4^{to}. basi, tibiis apice, anticis fere totis tarsisque pallidis ; antennarum stylo distincte biarticulato*.

The style of the antennæ, in this species, is longer than in *Thr. vulgarissima*, and distinctly biarticulate ; in the remaining species it becomes much shorter.

Sp. 24. *Thr. dispar*. Fem. *Nigra, antennis fuscis medio indeterminate pallidis ; tibiis tarsisque pallidis, illis basi, anticis angustiis fuscis. Mas. Nigro-fusca, antennis pedibusque pallidis, illis basi et apice, femoribus basi, posterioribus latè infuscatis ; elytrorum rudimentis albidis tantum.*

Style of antennæ much less distinctly articulated and shorter than in the last.

On *Festuca fluitans*, and other grasses, in autumn ; not rare.

Sp. 25. *Thr. brevicornis*. Fem.

Distinguished by the short antennæ which become thicker towards the end.

Found on *Festuca fluitans* ; very rare.

Subs. BBB. *Alæ pterothorace breviores.*

Sp. 26. Thr. subaptera. Fem.

Colour dark, like *Thr. Physapus*, but the metathorax is shorter.

Occurs on muddy coasts, on *Plantago maritima*, I believe.

Sp. 27. Thr. pallens. Fem. *Pallide testacea abdomine nigricante; antennis basi et apice fuscis stylo vix distincte biarticulato.*

[See also *Thr. obscura* var. and *Thr. dispar* male.]

Subgen. V.—BELOTHRIPS.

Antennæ stylus biarticulatus, articulo 6^o. longior: fem. segmentum ultimum elongatum, compresso-carinatum, spiniforme: (maris vero ut in reliquis, brevius, apice subtruncato): characteres reliqui fere Thripsidis.

Sp. 28. Thr. B. acuminata. Mas et Fem.

Black, with brown legs; darker antennæ and blackish thighs; fore-shanks incrassate and a little concave below, but less so than in *Thr. manicata*, where they may be called clypeate.

Found on sand-hills by the sea, but whether in the flowers of *Galium verum*, *Lathyrus pratensis*, or *Plantago*, I could not determine.

FAM. III.—COLEOPTRATA.

Elytra latiuscula, postice ciliata, nervis longitudinalibus et transversis: terebra recurva: antennæ variae: corpus minus depresso.

GEN. V.—MELANTHrips.

Antennæ distincte 9-articulatæ: os breve: palporum maxillarium articuli subæquales: alæ anticæ costa pubescentes, nervis transversis tribus: tibiae anticæ apice productæ: terebra a basi parum recurva.

Sp. 1. Mel. obesa. Mas et Fem.

Deep black, with blackish elytra: larva depressed, pale yellow, body broad behind, the last segment with 4 small pointed scales: antennæ rather long, 7-jointed.

Found in the flowers of *Reseda* and *Ranunculus*.

GENUS VI.—ÆLOTHRIPS.

Antennæ quasi 5-articulatæ, scilicet articulis 4 ultimis minutissimis in apiculam teretem connatis: os longiusculum teres: palporum maxillarum articulus ultimus perbrevis: oculi versus os producti: tibiae inermes. Fem. terebra recurva, et abdominis apex subtus fornicato-ascendens.

Subgen. I.—COLEOTHRIPS.

Corpus subdepressum: pterothorax latissimus, subquadratus: alæ anticæ costa nudæ, nervis transversis quatuor. Mar. abdomen lateribus appendiculatum.

Thrips spp. Auctt.

Sp. 1. *Æ. C. fasciata*. Mas et Fem. *Elytris basi, fascia apiceque albis.*

Thrips fasciata . Linn. Fna. S. 1030.

_____. De Geer. III. 18. No. 4.

Thrips, &c. . Geogr. I. 385. No. 3.

Larva yellow, the abdomen behind deeper orange, a whorl of hairs on each segment, more conspicuous on the last two: prothorax elongate: antennæ shorter than in the perfect insect, the number of joints similar: mouth nearly perpendicular, not inflected under the breast: joints of maxillary palpi not very unequal.

In various flowers, especially *Reseda*.

Sp. 2. *Æ. C. vittata*. Fem. *Elytrorum basi et costæ dimidio exteriore albis.*

Subgen. II.—ÆLOTHRIPS.

Corpus longius, cylindricum: pterothorax constrictus: alarum vix rudimenta.

Sp. 3. *Æ. albicincta*. Fem. *Atra abdominis apice ferrugineo; antennis basi et abdominis antici annulo albis.*

Addenda.—I have in vain searched on the juniper and flax for *Thrips juniperina* and *Thr. variegata*. *Thr. fusca* (Muller), on account of the insinuated resemblance to *Thr. fasciata*, may perhaps be the same with *Melantrips obesa*, but the description is too slight to afford any assistance in identifying the species intended.

ART. XLII.—*Natural History and Metamorphosis of an Anomalous Crustaceous Parasite of Carcinus Mænas, the Sacculina Carcini.* By J. V. THOMPSON, F.L.S. Deputy-Inspector-General of Hospitals.

A LONG time previous to the discovery of the metamorphosis in the *Crustacea*, I had occasionally met with the common shore-crab (*Carcinus Mænas*), having a purse-like appendage attached to the under-side of the tail, (figs. 1 and 2.) The

Fig. 1.

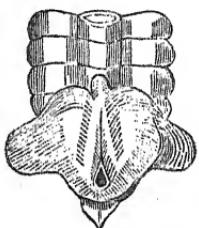


Fig. 2.



first of these being a female, it became a question whether this crab might not differ from others known to carry their ova after exclusion, attached in naked groups to the false feet under the tail. This was speedily decided, by finding males with the same appendage; and by individuals of both sexes being occasionally met with, having two or even three of them, but always attached to the median line of the tail, and to the interstices of some of its uppermost joints. These anomalies appeared to declare that they could be no part of the crab itself, but some anomalous excrescence or parasite.

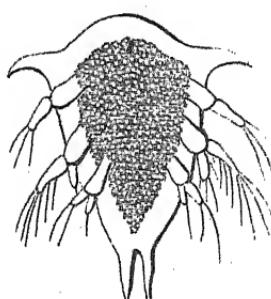
These parasites, which may be seen of various size, resemble a leather pouch or satchel in figure and texture, are perfectly symmetrical, having an opening drawn together and closed at the lower end, and are so attached by a short thick neck to the membranous interstice between one of the upper joints of the tail of the crab, as to appear continuous with the body of the animal. On removing them by force, the neck presents the appearance of irregular branched joints, and a large opening is seen, which has every appearance of being continuous between the rectum of the crab and the cavity of the parasite, so as to conduct us to the conclusion, that it is through this

source it obtains the nutriment necessary to its support and growth. Externally the parasite does not present the slightest vestige of any kind of members.

On laying open the body of the parasite, the external coat appears to be composed of a double membrane, the outer rough, the inner smooth, within which we arrive at another whitish membranous sac, quite loose, except at the neck and lower opening, with both of which it is closely united. This membrane being slit open, a very large and flattened glandular body comes into view, of a white colour and smooth surface, filling the body from side to side, along one of which it is firmly attached to the enveloping loose membrane, as well as to the lower opening, where it terminates by a narrow neck, which is probably its secretory duct; beneath this gland the ample ovary is situated, composed of numerous elongated bunches of concatenated ova, enclosed within a very transparent membrane, attached only to the lower opening, where it terminates in two distinct apertures. Hitherto I have not been able to discover any other organs, unless a very small translucent sac, situated at the upper connected edge of the glandular body, and between it and the neck, with which it is also united. Query,—Can this be the stomach of the animal?

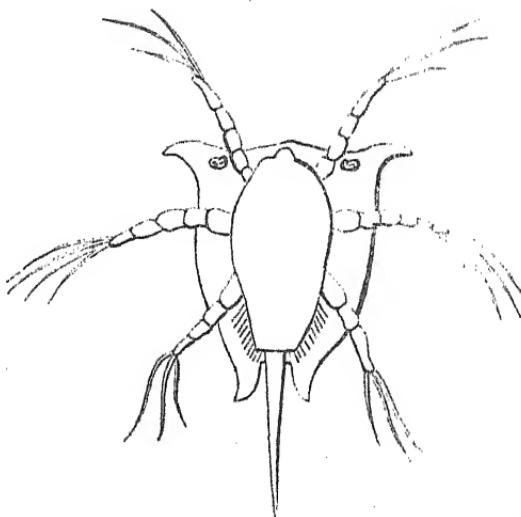
Such was the state of my knowledge in regard to this hitherto unobserved and very anomalous parasite, when I accidentally met with one of the above-named crabs in a trawl-boat, having a remarkably large and turgid parasite, from the lower aperture of which issued a purplish granular substance. Subjecting some of this substance to the microscope, it was found to consist of minute larvæ (fig. 4), in which it was easy

Fig. 4.



to recognise a resemblance to *Argulus armiger* (fig. 6), a microscopic crustaceous animal, never seen but by the Dutch

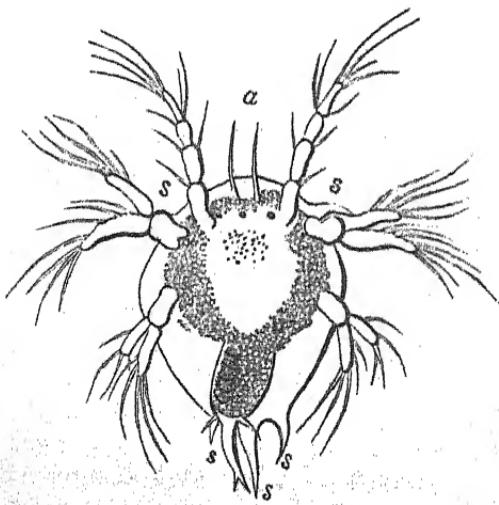
Fig. 6.



micographer Slabber. I could not, therefore, but felicitate myself upon the recovery of this long-lost type.

Several years elapsed before I discovered this same larva in its advanced state (fig. 5), which I have since found to abound

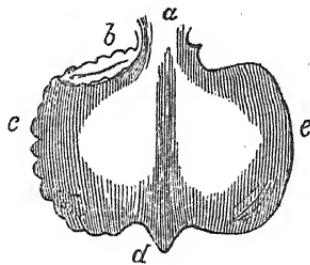
Fig. 5.



in the harbour of Cove during the Spring months; by this discovery its identity, through Slabber's rude figure, became sufficiently apparent.

Some important results and reflections naturally present themselves from a consideration of the foregoing detail, but they derive a ten-fold degree of interest by the subsequent discovery of the metamorphosis in the pedunculated *Cirripedes*, as developed in the Memoir read before the Royal Society. Without this we should still remain ignorant of the real affinities of this curious parasite, and of the mystery of its procreation. That it agrees with no tribe of the *Crustacea* is apparent, not even with the *Cirripedes*; nevertheless, its concealed affinity to these latter becomes evident, on a comparison of the respective larvae; and yet how different and masked is the perfect animal, which presents us with another point of affinity in a union of the two sexes in the same individual; indeed, the *Sacculina* furnishes the only example in nature of an animal all generative organs, to the apparent exclusion of every other,—its body being entirely filled with the ovaria, and an enormous testicular gland. (Fig. 3.)

Fig. 3.



To an animal permanently fixed, and deriving its sustenance wholly through the medium of another, sight and members would have been useless, and are therefore cancelled by a Providence which never errs, and invariably adapts every animal to the peculiar station it is intended to fill in the scale of existence. In this respect it is however singular, as there are no other parasites of this class but retain some few members, if only for the purpose of adhesion.

If any naturalist is disposed to dispute the claim of *Sacculina* to the rank of an animal when in its last stage, and to consider it as a mere conceptacle, I have only to observe, that its long-continued growth, and the complication of an obvious testicular

gland, are in opposition to such an opinion. Indeed, we cannot but perceive in this curious animal a repetition of the singular metamorphosis of the *Cirripedes*, and of some others which I hope shortly to make known, in all of which the animal in its last stage, contrary to what we observe in insects, is less perfect and more simple in structure than its larva!

In the first stage of the *Sacculina*, it is free, provided with a remarkably powerful natatory apparatus, with sight, lives to acquire a comparatively large size, and having fastened upon the crab destined for its future support, insinuates itself, first under the tail flap, and then penetrates the rectum of its victim, and there undergoes its very singular metamorphosis; and from being little larger than a pin's head, acquires such a remarkable bulk as to exceed in width the flap or tail part even of the female crab, and to weigh as much as a quarter of an ounce, and probably contain a million of ova! This therefore, comparatively to the size of the animal from which it derives its support, is the largest parasite known, and must incommodate the crab in proportion to its growth and number, independent of opening a way for the attachment of barnacles, *Serpuli* and *Zoophites*. From its prodigious fertility, and not even one-tenth of the crabs being so infested, numbers must be devoured in its first or free stage; it is in this way that it probably contributes to the grand scheme of creation, as in its second stage it appears to live merely to prolong its own race, and may have its use in filling up some link in the scale of natural affinities.

Thus I have no doubt but it will eventually tend to diminish the apparent interval between the *Balani* and *Lepades*, should the advanced larva of the latter be found to become *binocular*, which is more than probable, considering their perfect resemblance in their nascent state.

REFERENCES TO THE FIGURES.

Fig. 1. Parasite of *Carcinus Mænas*, as attached to the rectum of the crab, and showing its lower opening. Natural size.

Fig. 2. The other side of the same.

Fig. 4. The larva of *Sacculina Carcini*, when first hatched. Magnified.

Fig. 5. The supposed larva when fully grown, magnified; *a* horns, at the base of which its three eyes are seen, *s* the five spines of the dorsal clypeus.

Fig. 6. A copy of Slabber's figure, the *Argulus Armiger* of Latreille.

Fig. 3. The testicular gland; *a* broad upper attachment, *d* lower narrow attachment, *c* puckered edge, by which one side is attached to the enveloping tegument, *e* its opposite free edge, *b* the translucent organ, supposed to be the stomach (?) of the animal, firmly lodged in a cavity on one shoulder of the gland.

ART. XLIII.—*Extracts of Letters from C. Darwin, Esq., to Professor Henslow.*

PRINTED FOR PRIVATE DISTRIBUTION.

“ St. IAGO (Cape de Verd Islands) is singularly barren, and produces few plants or insects: on the coast I collected many marine animals, chiefly gasteropodous mollusca (I think some new).”—P. 3.

“ Rio de Janeiro.—I am now collecting fresh water and land animals; if what was told me in London is true; viz. that there are no small insects in the collections from the tropics, I tell entomologists to look out, and have their pens ready for describing. I have taken as minute (if not more so) as in England, *Hydropori*, *Hygroti*, *Hydrobii*, *Pselaphi*, *Staphylini*, *Curculiones*, *Bembidia*, &c. &c. It is exceedingly interesting to observe the difference of genera and species from those I know; it is however much less than I had expected. I have just returned from a walk; and, as a specimen how little the insects are known, *Noterus*, according to Dic. Class. consists solely of three European species. I, in one haul of my net, took five distinct species.”—P. 5.

“ Monte Video.—I made an enormous collection of Arachnidæ at Rio; also a good many small beetles in pill boxes, but it is not the best time of the year for the latter.”—P. 5.

“ Amongst the lower animals, nothing has so much interested me as finding two species of elegantly coloured *Planariæ* (?) inhabiting the dry forest! The false relation they bear to snails is the most extraordinary thing of the kind I have ever seen. In the same genus (or more truly family) some of the marine species possess an organization so marvellous that I can scarcely credit my eyesight. Every one has heard of the discoloured streaks of water in the equatorial regions. One I examined was owing to the presence of such minute *Oscillatoria*, that in each square inch of surface there must have been at least one hundred thousand present.”—P. 6.

“ I might collect a far greater number of invertebrate animals if I took up less time with each, but I have come to the conclusion that two animals, with their original shape noted down, will be more valuable than six with only dates and place.”—P. 6.

"There is a poor specimen of a bird, which to my un-ornithological eyes appears to be a happy mixture of a lark, pigeon, and snipe. Mr. M'Leay himself never imagined such an inosculating creature."—P. 8.

"I have taken some interesting *Amphibia*; a fine *Bipes*; a new *Trigonocephalus*, in its habits beautifully connecting *Cratalus* and *Viperus*: and plenty of new (as far as my knowledge goes), Saurians. As for one little toad, I hope it may be new that it may be christened *Diabolicus*. Milton must allude to this very individual when he talks of ' squat like a toad.' "—P. 8.

"Amongst the pelagic *Crustacea*, some new and curious genera. Among *Zoophites* some interesting animals. As for one, *Flustra*, if I had not the specimen to back me, nobody would believe in its most anomalous structure. But, as for novelty, all this is nothing to a family of pelagic animals, which at first sight appear like *Medusa*, but are highly organized. I have examined them repeatedly, and certainly, from their structure, it would be impossible to place them in any existing order. Perhaps *Jalpa* is the nearest animal, although the transparency of the body is almost the only character which they have in common."—P. 9.

"The southern ocean is nearly as sterile as the continent it washes. *Crustacea* have afforded me the most work. I found a *Zoë* of the most curious form, its body being only one-sixth the length of the two spears. I am convinced, from its structure and other reasons, it is a young *Erichthus*. I must mention part of the structure of a decapod, it is so very anomalous: the last pair of legs are small and dorsal; but instead of being terminated by a claw, as in all others, it has three curved bristle-like appendages; these are finely serrated, and furnished with cups somewhat resembling those of the *Cephalopods*. The animal being pelagic, this beautiful structure enables it to hold on to light floating objects. I have found out something about the propagation of that ambiguous tribe the *Corallines*."—P. 11.

"But what is of more general interest is the unquestionable (as it appears to me) existence [in Patagonia] of another species of ostrich besides the *Struthio ostrea*. All the Guachos and Indians state it is the case: and I place the greatest faith in their observations. I have the head, neck, piece of skin,

feathers, and legs of one. The differences are chiefly in the colour of the feathers and scales; in the legs being feathered below the knee, also in the nidification and geographical distribution."—P. 16.

" We were driven into Chiloë by some very bad weather. An Englishman gave me three specimens of a very fine lucanoidal insect, which is described in the Cambridge Philosophical Transactions, two males and one female." [*Chi-asognathus Grantii*, Stephens.]

" In zoology I have done but very little, excepting a large collection of minute *Diptera* and *Hymenoptera*, from Chiloë. I took in one day *Pselaphus*, *Anaspis*, *Latridius*, *Leiodes*, *Cercyon*, and *Elmis*, and two beautiful true *Carabi*. I might almost have fancied myself collecting in England. A new and pretty genus of nudibranch *Mollusca*, which cannot crawl on a flat surface, and a genus in the family of *Balanidæ*, which has not a true case, but lives in minute cavities of the shells of *Concholepas*, are nearly the only two novelties."—P. 22.

" I also send a small bottle with two lizards; one of them is viviparous, as you will see by the accompanying notice. M. Gay, a French naturalist, has already published, in one of the newspapers of this country, a similar statement, and has probably forwarded some account to Paris."—P. 30.

The following is an extract from the newspaper referred to by Mr. Darwin.

" Besides these labours I employed myself during the great rains in dissecting various reptiles. It must be interesting to know the influence of the climate of Valdivia on the animals of this family. In the greater part of those which I have been able to submit to my scalpel, I have found a truly extraordinary fact, that they were viviparous. Not only the innocent snake of Valdivia has offered to my notice this singular phenomenon, but also a beautiful and new kind of *Iguana*, which approaches very near to the *Leposoma* of Spix, and to which, on account of its beautiful colours, he has given the name of *Chrysosaurus*. All the species, even those which lay their eggs in Santiago, here produce their young alive; and the same thing happens with the *Batrachia*, and particularly with a genus near to the *Rhinella* of Fitzingen, of which the numerous species have the skin pleasingly spotted with green, yellow, and black. I need not dwell on the importance of this last

example in reference to comparative anatomy: an importance which appeared to me still greater when, on analyzing a tadpole not yet transformed, I satisfied myself that nature has not varied her plan of organization. In these, as in the tadpoles, which live in water, the intestines were of a length very disproportioned to the body; now if this length was necessary to the latter, which live upon vegetable substances, it was altogether useless to those which are to undergo their metamorphosis in the belly of the mother; and thus nature has followed the march prescribed to her by a uniformity of construction, and without deviations from it, has admitted a single exception, a real hiatus, well worthy the attention of the philosophical naturalist."—P. 31.

ART. XLIV.—*Notes on various Insects.* By IONICUS.

(Continued from page 379.)

16. *Myrmeleonidæ* were common in the Ionian Isles during the summer months. The earliest and smallest species appeared about April 17th. Having captured several of these in the perfect state, I was induced to look for the larva, and on the 19th, on the sea-shore, found several of a larger species, which appeared to have been not very long developed from the egg state, as they were nearly smooth, and preyed only on the smaller species of ants. They were then not nearly so expert in gaining their livelihood as they afterwards became, their prey frequently escaping after falling into the pit, and within reach of their jaws. Having frequently destroyed its pit, the specimen I kept would not rebuild it, but lurked in the sand. On May 16th, I missed it, and digging up the sand, found it at the depth of two inches in a hollow cavity, in which it probably changed its skin, as on the 19th it had returned above ground, and was lurking in its usual manner. On the morning of the same day I found several larger larvæ, exactly resembling the one I kept, except in size: their pits were about two inches deep and two and a half inches in diameter, and were close to the train of a large black ant. I took one of them home and put it into the tumbler with my former friend, and some of the ants, when it immediately constructed a pit, and devoured several of the ants. I should observe that the

ant is naturally the more compact and stronger insect; its mandibles are more truncate, but are not so long nor sharp at the extremities, and the ant-lion being perfectly aware of this advantage, on seizing the ant invariably dragged it right under the sand, by which means the ant could not turn on it, or seize its soft body, without getting a mouthful of sand, which I suppose would not have been more agreeable than the ashes of the Dead Sea fruit were to Satan and his crew; but the larva of the ant-lion having hollow jaws, and feeding only on the juices of the ant, was by no means incommoded by the arrangement. Very shortly after this, the new ant-lion showed proofs of a very unamiable disposition: the weaker ant-lion had as yet escaped its observation, but a jerk of sand, directed at an unfortunate ant that was passing, showed our new friend that it was not the sole occupant of the tumbler. It then left its pit and ran under ground, like a mole, towards the weaker ant-lion, which ran off in the same manner, and a chase commenced. The larger larva proving the swifter, the smaller was obliged to turn round and show fight, but was easily seized and dragged under ground, when I interfered, and placed them under separate tumblers. By June 20th this new larva was nearly full grown: it was very industrious, seldom keeping its pit long entire. When a large lively ant was placed in the tumbler, and carefully avoided the pit, and the sand jerked at it, the ant-lion would frequently enlarge the pit, so as to give it the diameter of the glass, by which means the ant could not escape falling in. I also saw it occasionally catch house flies, which had happened to alight at the bottom of the pit, not observing the greedy pair of jaws which protruded and seized the fly. It spun its web about the end of June, and came out to a perfect insect on July 31st.

In Cephalonia were several species of ant-lion. I captured seven species, but I believe there were others.

M. Libellulooides was a very common species, and as far as my observations went, appears to differ from other ant-lions in the habits of its larva, which does not appear to excavate a pit, but lurks underground, running like a mole, and leaving a track behind it. The first of these larvæ I met with on May 19th; they are seven or eight lines in length, and are milk white with black spots; the mandibles have three side teeth: the sides of the body are clothed with short scattered

white hair, and the anus and legs have a fringe of black hair. I had previously been looking for the nests of ant-lions; and walking along the sea-shore, came to a part of the sand in which was an excavated ring, about four inches in diameter, and so mathematically circular, that I perceived at once that it was the work of some insect. Observing the sand move at one part of the circumference, I dug up this *Myrmeleon* larva, attempting to devour a beetle (*Asida grisea*). I placed them both with some sand in a pocket collecting box, and took them home, and saw it again seize the beetle, dragging it under ground, where it held it for nearly three hours; but the shell of the beetle proved so hard, that it eventually escaped uninjured. I often caught a similar larva afterwards, but always lurking in the sand; and as I looked for its pit, it is not probable that that of such a large larva would escape my researches had it constructed one. This larva appears to prey principally on heteromerous beetles, such as *Pedinus*, *Tentyria*, *Asida*, *Helops*: also on the *Otiorynchi*, which are so common on the sands about Lixurie. Its bite is very severe.

Ascalaphus Italicus was common on Mount St. Salvador, in Corfu.

17. *Cetonia aurata*, *quercus*, and *metallica*, are found in the summer months in Cephalonia. *C. aurata* is rather uncommon. I used to find it on a wild white rose; and on one, to my great surprise, I discovered seven or eight of the *Pediculus*, or rather larva of *Meloe*, according to the observations of Mr. Newman and others; they were linear, pale, testaceous, and $\frac{3}{4}$ line in length, and I subjoin a magnified figure, which I



sketched at the time. The *C. quercus* and *C. metallica* were at first common on the thistle, but after most of the thistle tribe had done flowering, I found them principally on the *Ulmus campestris*, or elm. They were attracted to these and quince

trees by a sweet juice which exuded from the trunks, and which has been supposed to have been caused by the wounds inflicted by the *Cicada orni*. There were frequently twenty or thirty on one tree, and the effect produced by the numbers buzzing about with their beautiful violet wings was highly gratifying to an entomological eye.

18. *Mutillidae*.—Of thirteen species of *Mutilla* which I found in Cephalonia, *M. europaea* was the most common, and varied much in size: male specimens were very rarely seen. I feel very little doubt but that the *Mutillidae* are parasitical on other bees or wasps. I have frequently seen the females enter the nests of *Andrenidæ*, and occasionally those of *Cerceris*. I also once caught a female climbing the trunk of the *Ulmus campestris*, on which some of the *Eumenes* had formed their clay bottle-shaped nests. Another species I took commonly on the sea sand, in which the *Bembex rostrata* had dug its nests. The cry of the *Mutillæ* is shrill, and the sting very pungent; they are swift in their motions. The males appear to pass the night under rubbish. I caught one one evening under a stone which I had turned up for *Coleoptera*, and another under some sea-weed, when looking for *Scarites leavigatus*.

19. *Scholia 2-cincta*, Fab.—On July 19th, in the same bay, a large spider had stretched its web between two spurge bushes. One of its victims was a *Scholia*, which was completely enveloped by the spider in a shroud of white silk; and on tearing this off, I received practical, and not particularly agreeable, proof, that the *Scholia* was still alive. A few days after, I saw several females, whom I traced to a sand bank, where their nests were. The nest runs about eighteen inches under ground, and the opening to it is very wide. I poked several of the *Scholia* out, but found nothing in their nests; but on returning, on August 5th, and digging up another, which a female had entered, I found a large locust, *L. lineola*, which is probably the prey of this species. *S. flavifrons*, which is three times larger, and is found in Corfu, and other parts of the Mediterranean, must commit great havock. *S. 2-cincta* flies without any hum; its male I took occasionally, but singly, on flowers. Of *S. interrupta* and *4 punctata* I found only the male sex. They are extremely sluggish, crowding on ears of grass near the sea side, in societies of twenty or thirty: here

they pass the night, and scarcely make any attempt to escape when seized. I found them and the males of a large *Dasy-poda* indiscriminately intermixed. The males of *S. sex-cincta?* Fab. are found in much the same localities, whereas that of another species was solitary, and generally found on the flower of the bramble, and was tolerably active.

20. *Bembex rostrata*.—This curious hymenopterous insect was common in a bay near Argostoli, during the heat of summer. The first I observed on July 20th, and by August 7th had several opportunities of watching their habits. They appeared to differ in the size and markings of specimens, and the male was of a lighter colour, appearing almost white when flying. They appear to catch their prey on the wing, as I saw them in considerable numbers in one part of the bay, but they very seldom alighted, and on the approach of each other they fly and pursue with great velocity: here I also caught their parasite, the *Parnopes carnea*. The nests of the *B. rostrata* are constructed in the soft light sea sand, which of course blows over the mouth of the nest, and makes it too small for the bee's entrance. The *Bembex* therefore alights with its head towards the nest, and with astonishing swiftness throws off the sand, covering the aperture to several inches of distance, scraping with its forelegs like a dog. Directly the mouth is clear it enters, carrying with it the prey intended for its future progeny, and the wind blowing over the nest again must in part conceal it from all enemies. Its prey consisted of such flies as frequented the sand; amongst others I found a bottle-green fly.

21. *Geotrupes subarmatus*,^a which, at p. 377, I mentioned under the name of *Typhaeus Ionicus*, is found in Herme, near Guernsey, from which small island I have procured it, and therefore think it probable that it may be found in England. In this opinion I am confirmed by having, in some collections in Edinburgh, seen the unarmed female of *G. subarmatus* placed beside, and as the other sex of, the male *Typhaeus vulgaris*; whereas in others they have the real pair of *T. vulgaris*, the female of which is smaller than the male, and has shorter horns: it again very closely resembles the male of *G. subarmatus*. This I trust will soon be identified as an addition to British entomology, if not already done so.

^a *Scarabaeus pumilus*, Marsh. I. 8; *Typhaeus vulgaris* B. Steph., Syst. Cat. I. 107.—ED.

22. *Brachycerus undatus*, feeds on the leaves of the *Arum arisarum*, on which we found it in great abundance in October in Corfu, when in company with Mr. Kuper. *Brachycerus barbarus* feeds on the medicinal squill; several are generally found at the heart of the leaves near the root, and are thus common, but not frequently met with by one unacquainted with their habits. They are nearly as hard in shell as the diamond-beetle, and they generally acquire a tinge of white from the clay, in which the squill grows, adhering to them. *Brachycerus algirus* feeds on the leaves of a very large and handsome species of lily, which grows in sea sand, and flowers in August; the beetle, however, appears earlier in the season, but rather later than *B. barbarus*. I took this species at Lixurie, Cephalonia.

ART. XLV. — *Monographia Chalciditum.* By FRANCIS WALKER.

(Continued from page 206.)

“ —— the green myriads in the peopled grass.”

PTEROMALUS.

SECTIO XXV. Mas et Fem.

Mas. — Corpus angustum: caput thorace vix latius: antennæ filiformes, crassæ, corpore paullo breviores; articuli 5°. ad 10^{um}. curtantes; clava fusiformis, articulo 10°. duplo longior: thorax sublinearis, convexus: prothorax brevis: mesothoracis parapsidum suturæ conspicuae: metathorax bene determinatus: abdomen lineare, depresso, thoracis longitudine at vix latitudine; segmentum 1^{um}. magnum; sequentia breviora, subæqualia: sexualia exerta: alæ longæ; nervus cubitalis radiali brevior.

Fem. — Corpus latius: antennæ crassiores, clavatæ, corporis dimidio paullo breviores; clava brevi-ovata, articulo 10°. plus duplo longior et paullo latior: abdomen ovatum, subtus angulatum, apice elevatum et acuminatum, thoracis longitudine: oviductus occultus.

Sp. 104. Pter. bellus. Mas et Fem. *Læte viridis, cupreovarius, antennæ nigrae, abdomen cupreum mari flavo maculatum, pedes flavi, femora viridia, aæc limpidae.*

Mas.—*Læte viridis, nitens, cupreo varius: os fulvum: oculi pieci: antennæ nigrae; articulis 1^{us}. fulvus, apice viridis: abdomen cupreum, basi viride; segmenta 1^{um}. et 2^{um}. flavo maculata: sexualia fulva: pedes læte flavi; coxae virides; femora viridia, basi et apice flava; protarsi fulvi; meso- et metatarsi apice fusi: aæc limpidae; proalæ ad costam obsolete fulvo tinetae; squamulae cupreo-virides; nervi fulvi; stigma fuscum, parvum.*

Fem.—*Viridis: antennis articulus 1^{us}. fulvus, apice fuscus; 2^{us}. viridi-aeneus: mesothoracis scutellum postice aeneum: abdomen purpureo-cupreum; segmentum 1^{um}. læte viride, apice cupreum; 5^{um}. et 6^{um}. basi viridia; oviductus fulvus: femora viridia, basi et apice flava. (Corp. long. lin 1 $\frac{1}{2}$ —2; alar. lin. 1 $\frac{2}{3}$ —2 $\frac{1}{2}$.)*

Var. β.—*Mas, caput et thorax aeneo-viridia.*

Var. γ.—*Mas, caput viride: thorax aeneo-viridis.*

Var. δ.—*Mas, caput et thorax omnino viridia.*

Var. ε.—*Mas, abdominis latera et apex aeneo-viridia.*

Var. ζ.—*Mas, femora flava, medio supra viridia.*

Var. η.—*Mas, Var. ζ. similis: metafemora viridia, basi et apice flava.*

Var. θ.—*Fem. mesothoracis scutellum omnino viride: abdominis segmenta omnia basi viridia.*

Var. ι.—*Fem. Var. θ. similis: thoracis suturæ aeneo-virides.*

Var. κ.—*Fem. thorax aeneo-viridis; mesothoracis scutellum cupreum.*

Var. λ.—*Fem. caput et thorax viridia: abdominis segmentum 1^{um}. viridi-cyanum, apice purpureo-cupreum.*

Var. μ.—*Fem. caput et thorax viridi-aenea.*

Var. ν.—*Fem. Var. μ. similis: mesothoracis scutellum et meta-thorax cupreo-aenea.*

Var. ο.—*Fem. caput viridi-aeneum: thorax cupreo-aeneus: abdomen cupreum; segmenta basi viridia.*

Var. ξ.—*Fem. thorax aeneo-viridis: metathorax viridis.*

Var. π.—*Fem. thorax viridis: mesothoracis scutum utrinque cupreum.*

Var. ρ.—*Fem. Var. λ. similis: abdominis segmentum 1^{um}. viride, apice cupreum.*

Var. σ.—*Fem. abdominis segmentum 1^{um}. cyaneum, apice cupreo-viride; 2^{um}. et sequentia basi viridi-cyanæa.*

Var. τ.—*Fem.* alæ omnino limpidae.

Var. υ.—*Fem.* cyaneo-viridis: abdominis segmenta postice cuprea: alæ omnino limpidae.

Var. φ.—*Fem.* metathorax viridi-aeneus: meso- et metapedum tibiæ et tarsi pallide flava: alæ omnino limpidae.

Var. χ.—*Fem.* viridi-aureus: abdomen cupreum; discus cyaneo-purpureus; segmentum 1^{um}. viride, cupreo varium: alæ omnino limpidae.

Var. ψ.—*Fem.* caput viride: thorax viridi-cupreus: alæ omnino limpidae.

Var. ω.—*Fem.* viridi-aeneus: caput viride: abdomen cupreum, basi viride.

May to September; near London, Windsor Forest, Hampshire, Isle of Wight, Dorsetshire, Devonshire, Cornwall, North Wales, Cumberland, and Lanarkshire.

Sp. 105. Pter. chloris. Mas. *Læte viridis, abdomen cupreum immaculatum.*

Læte viridis, nitens: oculi rufo-picei: antennæ nigræ; articulus 1^{us}. viridis, basi fuscus: mesothoracis paraptera viridi-aeneo marginata: metathorax aeneo-viridis: abdomen cupreum, basi et apice aeneo-viride: sexualia fusca: pedes læte flavi; coxæ et femora viridia; meso- et metatarsi apice fusci; protarsi fulvi: alæ limpidae; squamulæ aeneo-virides; nervi fusci; stigma parvum, obscurius. (Corp. long. lin. 1 $\frac{5}{4}$ —2; alar. lin. 2 $\frac{1}{4}$ —2 $\frac{1}{2}$.)

Var. β.—Thorax cupreo-maculatus: abdomen basi apice et utrinque viride: protibiae extus fusco vittatae.

Var. γ.—Protibiae extus viridi vittatae; meso- et metatarsi fusci, basi flavi.

Var. δ.—Thorax cupreo varius.

Var. ε.—Metacoxæ cyaneo-virides.

Var. ζ.—Thoracis discus cupreo-aeneus.

Var. η.—Thorax cupreo et purpureo varius.

Var. θ.—Abdomen viride; discus cupreus.

June and September; near London, Hampshire, Isle of Wight.

Sp. 106. Pter. constans. Mas et Fem. *Læte viridis*, antennæ nigræ, pedes rufi, abdomen cupreum basi viride, alæ limpidae.

Læte viridis, nitens: oculi rufo-picei: antennæ nigræ; articulus 1^{us}. æneo-viridis: *mari* mesothoracis latera et metathorax æneo-varia: *fem.* thorax æneo-viridis: *mari* abdomen cupreum, apice æneo-viride; segmentum 1^{um}. viride: sexualia fusca: *fem.* abdomen æneo-viride, basi cyaneum: pedes pallide rufi; coxae virides; protarsi fulvi; meso- et metatarsi flavi, apice fusi: alæ limpidae; squamulae fulvae, apice virides; nervi fulvi; stigma obscurius, parvum. (Corp. long. lin. 1½—1¾; alar. lin. 1½—2.)

Var. β.—*Mas*, mesothoracis scutellum æneo-viride.

Var. γ.—*Mas*, caput et thorax viridia, hujus discus cupreo-viridis.

Var. δ.—*Mas*, femora omnia viridi vittata.

Var. ε.—*Mas*, *Var. δ.* similis: mesothoracis scutellum, paraptera et epimera cuprea: abdomen cupreum; segmentum 1^{um}. basi viride, cupreo varium.

Var. ζ.—*Mas*, mesofemora intus viridi vittata.

Var. η.—*Mas*, *Var. γ.* et *Var. δ.* coloribus.

Var. θ.—*Mas*, abdomen læte viride; discus cupreus; segmentum 1^{um}. cyaneo-viride.

Var. ι.—*Mas*, *Var. γ.* similis: caput et mesothoracis discus cyaneo-viridia: meso- et metatarsi straminei, apice fusi.

Var. κ.—*Mas*, caput et thorax viridia: abdomen cupreum, basi et apice viride.

Var. λ.—*Mas*, abdomen viride; discus cupreo-viridis: meso- et profemora viridi vittata; meso- et metatarsi pallide straminei, apice fusi.

Var. μ.—*Mas*, caput et thorax viridi-cyanea: abdomen viride; discus cupreus: femora viridi vittata.

Var. ν.—*Fem.* cupreo-viridis: abdomen cupreum.

Var. ξ.—*Fem.* viridis: mesothorax postice et metathorax æneo-virides: abdomen cupreum; segmentum 1^{um}. basi viride.

Var. ο.—*Fem.* *Var. ξ.* similis: thorax omnino viridis.

Var. π.—*Fem.* viridi-æneus: mesothoracis scutellum cupreo-æneum: abdomen æneo-viride; discus cupreus.

Var. ρ.—*Fem.* *Var. ξ.* similis: femora supra viridi vittata.

Var. σ.—*Fem.* *Var. ρ.* similis: viridi-æneus: abdomen cupreum, basi viride.

Var. τ.—*Fem.* viridis: abdominis discus cupreus.

Var. v.—*Fem.* æneus: caput æneo-viride: thoracis suturæ virides: abdomen cupreum, basi cyaneo-viride.

May to September; near London, Isle of Wight, Dorsetshire, Devonshire, Cornwall, North Wales, Cumberland, Lanarkshire.

Sp. 107. Pter. cliens. Fem. P. constantis *statura, alæ sublimpidæ fusco obsolete nebulosæ.*

Æneus: caput viridi-æneum: oculi rufo-picci: antennæ nigræ; articulus 1^{us}. viridis: abdomen cupreum; discus obscure purpureus; segmentum 1^{um}. late viride: pedes fulvi; coxæ et femora viridia; meso- et metatarsi flavi, apice fusi: proalæ fusco indistincte nebulosæ; squamulae æneæ; nervi fulvi; stigma obscurius, parvum. (Corp. long. lin. 1 $\frac{3}{4}$; alar. lin. 2.)

September; coasts of Devonshire and Cornwall.

Sp. 108. Pter. impar. Mas et Fem. P. constante *angustior.*

Mas.—Læte viridis: oculi rufo-picci: antennæ nigræ; articulus 1^{us}. viridis: abdominis discus cupreus; segmentum 1^{um}. basi cyaneo-viride: pedes fusi; coxæ virides; trochanteres genua et tarsi flava, hi apice fusi; protarsi fulvi: alæ sublimpidæ; squamulae virides; nervi fulvi; stigma obscurius, parvum.

Fem.—Viridi-æneus: mesothoracis scutellum cupreo-æneum: abdomen cupreum; segmentum 1^{um}. basi cyaneo-viride: pedes obscure fulvi; femora viridi vittata; trochanteres et genua flava; meso- et metatarsi pallidiores, apice fusi. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{2}{3}$.)

Var. β.—*Mas.* thoracis latera cyaneo-viridia.

Var. γ.—*Mas.*, femora viridia; tibiæ flavæ, fusco vittatæ.

Var. δ.—*Fem.* æneo-viridis: abdominis segmentum 1^{um}. viride, apice cupreum.

Var. ε.—*Fem.* caput et thorax viridia: abdominis segmentum 1^{um}. basi viride: pedes rufi; femora extus et coxæ viridia; protarsi fulvi; meso- et metatarsi flavi, apice fusi.

Var. ζ.—*Fem.* *Var. ε.* similis: mesothoracis scutum viridi-æneum.

Var. η.—*Fem.* *Var. δ.* similis: femora viridia; tibiæ fuscae.

Var. θ.—*Fem.* caput viride: thorax æneus: abdomen cupreum; segmentum 1^{um}. viride, apice cupreum: pedes rufi; coxæ virides; propedium femora extus viridi vittata, tarsi fulvi; meso- et metatarsi apice fusi.

September; near London, Isle of Wight, Lanarkshire.

Sp. 109. Pter. brevivitta. Fem. P. constante *angustior*, *antennæ graciliores*, *proalæ cujusque disco macula oblonga fusca*.

Viridi-æneus: oculi rufo-picci: antennæ nigrae; articulus 1^{us}. viridis, basi fuscus: abdomen cupreum; segmentum 1^{um}. basi viride: pedes rufi; coxae virides; meso- et metatarsi flavi apice fusi; protarsi fulvi: alæ sublimpidæ; squamulae viridi-æneæ; nervi fulvi; stigma fuscum, parvum; proalæ cunctæ macula indistincta fusca. (Corp. long. lin. 1 $\frac{1}{2}$; alar. lin. 1 $\frac{2}{3}$.)

Var. β.—Femora supra viridi vittata.

Var. γ.—Læte viridis: abdomen viridi-æneum; segmentum 1^{um}. cyaneo-viride, apice viridi-æneum; alæ limpidæ.

September; near London. Isle of Wight.

Sp. 110. Pter. illudens. Fem. P. belli *similitudine*, *antennæ paullo breviores*, *alæ angustiores*, *femora omnino flava*.

Læte viridis, nitens: oculi rufo-picci: antennæ nigrae; articulus 1^{us}. fulvus; 2^{us}. nigro-viridis: abdomen cupreo-purpureum; segmentum 1^{um}. læte viride, cupreo-varium; 2^{um}. et sequentia basi utrinque viridia: pedes læte flavi; meso- et metapedum tibiæ et tarsi pallidiora, hi apice fusi: coxae virides: alæ limpidæ; squamulae et nervi fulva; stigma fuscum, minutum. (Corp. long. lin. 2; alar. lin. 2 $\frac{1}{2}$.)

July; New Forest.

SECTIO XXVI. Fem.

Caput thorace latius: antennæ graciles, breves, clavatae, corporis dimidio breviores; articuli 5^o. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10^o. latior et duplo fere longior: thorax longi-ovatus; segmenta bene determinata: prothorax brevis: mesothoracis parapsidum suturæ conspicuae: metathorax medioris, tristriatus: abdomen ovatum, subtus valde angulatum, apice acuminatum, thorace brevius: alæ amplæ; nervus cubitalis radiali multo brevior.

Sp. 111. Pter. pulchripes. Fem. *Viridis*, *antennæ nigro-fuscae*, *pedes flavi*, *alæ limpidæ*.

Læte viridis, nitens: oculi rufo-picci: antennæ nigro-fuscae; articulus 1^{us}. fulvus, apice fuscus; 2^{us}. æneus: abdominis discus

cupreo-aeneus : pedes latte flavi; coxae virides; femora et protarsi fulva; meso- et metatarsi apice fusi: alæ limpidae; squamulae et nervi fulva; stigma minimum, concolor. (Corp. long. lin. $1\frac{1}{2}$ — $1\frac{3}{4}$; alar. lin. $2\frac{1}{4}$ — $2\frac{1}{2}$.)

Var. β.—Antennis articulus 1^{us}. fuscus, basi fulvus: femora fusca, apice flava.

Var. γ.—Caput et thorax eyaneo-viridia.

Var. δ.—Abdomen viridi-cyanum; discus cupreo-aeneus.

May, June; near London. Windsor Forest.

SECTIO XXVII. Fem.

Caput thorace paullo latius: antennæ subclavatae, corporis dimidii vix longitudine; articuli 5°. ad 10^{um}. curtantes vix latescentes; clava longi-ovata, articulo 10°. duplo longior et paullo latior: thorax longi-ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax brevis: abdomen ovatum, subtus convexum, apice acuminatum, thoracis longitudine: alæ mediocres; nervus cubitalis radiali brevior.

Sp. 112. Pter. continuus. Fem. *Viridis*, *antennæ nigræ*, *pedes flavi*, *alæ limpidae*.

Læte viridis, nitens: oculi rufo-picei: antennæ nigræ; articuli 1^{us}. et 2^{us}. virides, ille basi fulvus: thoracis latera et metathorax aeneo-viridia: abdomen subtus cupreum; segmenta apice ænea: pedes flavi; coxae virides; femora et protarsi fulva; meso- et metatarsi apice fusi: alæ limpidae, fulvo minime tinctæ; squamulae et nervi fulva; stigma obscurius, minutum. (Corp. long. lin. 2; alar. lin. $2\frac{1}{2}$.)

Var. β.—Antennis articulus 1^{us}. fulvus, apice nigro-viridis: thorax viridis: prothorax aeneo-viridis: abdomen viridi-cyanum; segmenta apice purpurea.

Var. γ.—Thorax cupreo varius.

June, October; near London. Isle of Wight.

SECTIO XXVIII. Fem.

Corpus longum, gracile: caput thorace latius, antennæ subclavatae, corporis dimidio breviores; articuli 5°. ad 10^{um}. curtantes vix latescentes; clava ovata, articulo 10°. plus duplo longior vix latior: thorax longi-ovatus; segmenta bene determinata: prothorax brevis: mesothoracis parapsidum suturæ conspicuae: metathorax

mediocris: abdomen fusiforme, acuminatum, thorace longius et angustius, subtus convexum; segmentum 1^{um}. magnum; 2^{um}. et 3^{um}. breviora; 4^{um}. et 5^{um}. longiora; 6^{um}. brevius; 7^{um}. 4ⁱ. longitudine: alæ amplæ; nervus radialis cubitali duplo longior.

Sp. 113. Pter. collaris. Fem. *Viridis, pedes fulvi, antennæ et femora nigro-fusca, abdomen cupreum, alæ sublimpidæ.*

Viridis: oculi rufo-picci: antennæ nigro-fuscae; articulus 1^{us}. fulvus, apice fuscus: metathorax cyaneus: abdomen lète cupreum; segmentum 1^{um}. lète viride, cupreo varium; 6^{um}. apice cyaneum: pedes fulvi; coxae virides; femora nigro-fusca, apice basique fulva; meso- et metapedum genua et tarsi flava, hi apice fusi: alæ sublimpidæ; squamulæ et nervi fulva; stigma minutum, concolor. (Corp. long. lin. 2; alar. lin. 2½.)

Var. β.—Mesothorax apice cyaneus: abdomen apice viride.

June; Windsor Forest and New Forest.

SECTIO XXIX. Fem.

Corpus parvum: caput thorace paullo latius: antennæ breves, subclavatae, graciles, corporis dimidio paullo longiores; articuli 5°. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10°. latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicue: metathorax mediocris: abdomen ovatum, acuminatum, subtus angulatum, vix thoracis longitudine: alæ mediocres; nervus cubitalis radiali multo brevior.

Sp. 114. Pter. nanus. Fem. *Cupreo-aeneus, antennæ nigrae, pedes fulvi, alæ sublimpidæ.*

Cupreo-aeneus, parum nitens: oculi rufo-picci: antennæ nigrae; articulus 1^{us}. basi fulvus: abdomen nigro-viride, nitens; segmentum 1^{um}. lète cupreum: pedes obscure fulvi; coxae æneæ; meso- et metatarsi flavi, apice fusi: alæ sublimpidæ; squamulæ et nervi pallide fulva; stigma obscurius, minutum. (Corp. long. lin. 1; alar. lin. 1½.)

Var. β.—Caput obscure viride: antennis articulus 1^{us}. nigro-viridis: abdomen nigro-aeneum, basi æneo-viride.

July; near London.

SECTIO XXX.—Fem.

Caput thoracis latitudine : antennæ graciles, subelavatae, corporis dimidio longiores ; artieuli 5^o. ad 10^{um}. paullo curtantes et minime latescentes ; clava fusiformis, acuminata, articulorum 9^o. et 10^o. longitudine : thorax ovatus : prothorax brevis : mesothoracis parapsidum suturae vix conspicue : metathorax brevis : abdomen ovatum, supra planum, subtus angulatum, apice acuminatum, thorace paullo longius : alæ mediocres ; nervus cubitalis radiali paullo brevior.

Sp. 115. Pter. discolor. Fem. *Nigro-viridis, antennæ nigrae, abdomen nigro-aeneum fulvo maculatum, pedes fulvi, alæ sublimpidæ.*

Nigro-viridis, obscurus : oculi rufo-picci : antennæ nigrae ; articulus 1^{us}. fulvus ; 2^{us}. fulvo-picceus : abdomen nigro-aeneum, fulvo ante medium repande at non distinete maculatum ; segmentum 1^{um}. nigro-viride : pedes fulvi ; coxae nigro-virides ; femora fusca : alæ sublimpidæ ; squamulae nigro-virides ; nervi fulvi ; stigma minima, concolor. (Corp. long. lin. 1½ ; alar. lin. 1⅓.)

Var. β.—Thorax nigro-aeneus.

Var. γ.—*Var. β.* similis : macula abdominis latera attingens.

June ; on windows, near London.

SECTIO XXXI.—Fem.

Sect. XXI. proxima.—Caput thorace paullo latius : antennæ clavatae, corporis dimidii longitudine ; articuli 5^o. ad 10^{um}. curtantes et latescentes ; clava ovata, articulo 10^o. paullo latior et fere duplo longior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturae vix conspicue : metathorax brevis : abdomen ovatum, acuminatum, subtus angulatum, thorace vix longius : alæ mediocres ; nervus cubitalis radiali brevior.

Sp. 116. Pter. gaudens. Fem. *Cyaneo-viridis, antennæ nigro-fuscæ, abdomen cyaneo-cupreum, pedes flavi, femora viridia, alæ limpidæ.*

Cyaneo-viridis, nitens : oculi rufi : antennæ nigro-fuscæ ; articulus 1^{us}. fulvus ; 2^{us}. fusco-viridis : abdomen læte cupreum ; segmenta

1^{um} . 3^{um} . et 4^{um} . cyanea, apice cuprea: pedes flavi; coxae et femora viridia; protibiae et protarsi fulva; meso- et metatarsi apice fusci: alæ limpidae; squamulæ et nervi flava; stigma minutum, concolor. (Corp. long. lin. $1-1\frac{1}{2}$; alar. lin. $1\frac{1}{3}-1\frac{2}{3}$.)

Var. β.—*Viridis*: antennis articulus 1^{us} . apice fuscus: abdomen cupreо-purpureum; segmentum 1^{um} . basi cyaneum; sequentia basi viridia.

August; near London.

SECTIO XXXII.—Fem.

Sect. V. proxima. — Caput thoracis latitudine: antennæ subclavatae, corporis dimidii longitudine; articuli 5° . ad 10^{um} . eur- tantes vix latescentes; clava ovata, articulo 10° . latior et duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax brevis: abdomen ovatum, acuminatum, subtus angulatum, thorace paullo longius: alæ mediocres; nervus cubitalis radiali brevior.

Sp. 117. Pter. mærens. Fem. *Viridis*, *antennæ nigro-fuscae*, *abdomen cupreum*, *pedes flavi fusco-cingulati*, *ala sublimpidæ*.

Obscure viridis: oculi rufi: antennæ nigro-fuscae; articulus 1^{us} . niger, basi fulvus: abdomen obscure cupreum; segmentum 1^{um} . lâte viride; 2^{um} . et sequentia basi et utrinque viridia: pedes flavi; coxae et femora viridia; metatibiae nigro-fusco cingulatae; protibiae et protarsi fulva; meso- et metatarsi apice fusi: alæ sublimpidæ; squamulæ et nervi fulva; stigma parvum, fuscum. (Corp. long. lin. $1-1\frac{1}{4}$; alar. lin. $1\frac{1}{3}-1\frac{2}{3}$.)

Var. β.—Æneo-viridis: caput viride: mesothoracis scutellum cupreо varium: mesotibiae fusco cingulatae.

Var. γ.—Æneus: caput obscure viride: abdomen obscure cupreum; segmenta basi viridi-ænea.

Var. δ.—*Var. γ.* similis: tibiae fuscae, basi et apice flavæ.

Var. ε.—Thorax cupreо-æneus: metathorax viridis: abdomen supra cupreum, subtus viride; segmenta basi cyaneo-viridia.

Var. ζ.—Caput viride: thorax viridi-æneus: abdomen cupreum; segmentum 1^{um} . viride, cupreо varium, 2^{um} . et sequentia basi viridia.

Var. q.—*Viridis*: abdomen basi subtus et utrinque cyaneo-viride; discus cupreus; segmenta basi viridia.

September; coasts of Dorsetshire, Devonshire, and Cornwall.

SECTIO XXXIII.—Mas et Fem.

Mas.—Caput thorace latius: antennæ subfiliformes, corpore paullo breviores; articuli 5°. ad 10^{mm}. curtantes; clava fusiformis, acuminata, articulo 10°. plus duplo longior: thorax brevi-ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicue: metathorax brevis: abdomen sublineare, thorace angustius et brevius: sexualia occulta: alæ mediocres; nervus cubitalis radiali vix brevior.

Fem.—Caput thoracis latitudine: antennæ subclavatæ, corporis dimidio paullo longiores; articuli 5°. ad 10^{mm}. latescentes, non curtantes; clava ovata, articulo 10°. duplo longior et paullo latior: abdomen brevi-ovatum, thoracis longitudine.

Sp. 118. Pter. laticornis. Mas et Fem. *Aeneus* (mas) *aut viridi-cupreus* (fem.) *antennæ mari nigro-fuscæ*, fem. *fulvæ*, *pedes fulvi*, *alæ sublimpidæ*.

Mas.—*Aeneus*: oculi rufo-picei: caput, pro- et metathorax viridiæna: antennæ nigro-fuscæ; articulus 1^{us}. basi fulvus: abdomen cupreum, basi et apice obscure viride: pedes pallide fulvi; coxæ virides; meso- et metapedum genua et tarsi pallide flava, hi apice fusi: alæ sublimpidæ; squamulæ et nervi fulva; stigma mediocre, concolor.

Fem.—*Viridi-cupreus*: caput viride: antennæ fulvæ, apice obscureiores; articulus 1^{us}. pallidior: abdomen obscure viridi-cupreum; segmentum 1^{um}. lœte viride, cupreo varium: pedes fulvi; coxæ viræ; tarsi apice fusi: alarum squamulæ, nervi et stigma pallide fusca. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{2}{3}$.)

Found near London.

SECTIO XXXIV.

Caput thorace latius: antennæ subclavatæ, corporis dimidio longiores; articuli 5°. ad 10^{mm}. curtantes vix latescentes; clava longi-ovata, apicem versus abrupte attenuata, articulo 10°. plus duplo longior non latior: thorax brevi-ovatus, crassus: prothorax vix conspicuus: mesothoracis parapsides scuto fere in unum confusæ:

metathorax brevis : abdomen ovatum, acuminatum, subtus leviter angulatum, thorace longius et angustius : alæ mediocres ; nervus cubitalis radiali brevior.

Sp. 119. Pter. chalcomelas. Fem. *Niger, abdomen nigro-cupreum, pedes fulvi, alæ sublimpidæ.*

Niger, obscurus : oculi rufo-picei : antennæ nigrae ; articulus 1^{us}. basi fuscus : abdomen nigro-cupreum, nitens : pedes fulvi ; coxae nigrae ; meso- et metatarsi flavi, apice fusi : alæ sublimpidæ ; squamulæ et nervi fulva ; stigma minutum, concolor. (Corp. long. lin. $\frac{1}{2}$ —1 ; alar. lin. $\frac{3}{4}$ —1 $\frac{1}{2}$.)

Var. β.—Antennæ nigro-fuscae ; articulus 1^{us}. basi fulvus.

Var. γ.—Abdomen nigrum ; discus nigro-aeneus : pedes flavi ; meso- et metatarsi pallidiores, apice fusi : alarum squamulæ et nervi pallide fulva.

September ; coast of Devonshire.

SECTIO XXXV.—Fem.

Corpus longum, gracile : caput thorace vix latius : antennæ subclavatae, corporis dimidio longiores ; articuli 5°. ad 10^{um}. curtantes et minime latescentes ; clava ovata, articulo 10°. duplo longior et paullo latior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuae : metathorax brevis : abdomen fusiforme, acuminatum, subtus non angulatum, thorace longius : alæ mediocres ; nervus cubitalis radiali multo brevior.

Sp. 120. Pter. terminalis. Fem. *Viridis, praecedentibus longior et gracilior, antennæ nigro-fuscae, pedes flavi, alæ sublimpidæ.*

Viridis : oculi rufo-picei : antennæ nigro-fuscae ; articulus 1^{us}. fulvus, apice fusca : abdomen postice aeneum ; segmentum 1^{um}. cupreo varium ; 2^{um}. et sequentia apice obscure purpurea : pedes flavi ; coxae virides ; femora et protarsi fulva, illa supra fusca ; meso- et metatarsi apice fusi : alæ sublimpidæ ; squamulæ et nervi fulva ; stigma minutum, obscurius. (Corp. long. lin. 1 $\frac{1}{2}$; alar. lin. 1 $\frac{1}{2}$.)

June ; near London ; Isle of Wight.

SECTIO XXXVI.—Fem.

Caput thorace latius: antennæ clavatae, corporis dimidio paulo longiores; articuli 5^o. ad 10^{mm}. curtantes et latescentes; clava ovata, articulo 10^o. latior et plus duplo longior: thorax ovatus, angustus: prothorax brevissimus: mesothoracis parapsidum sutura vix conspicua: metathorax brevis: abdomen longi-ovatum, acuminatum, subtus non angulatum, thorace paullo longius: alæ angustæ; nervus cubitalis radiali multo brevior et angulum quam hujus generis plerisque acutiorem fingens.

Sp. 121. Pter. compressus. Fem. *Viridis, antennæ nigro-fuscae, abdomen cupreum basi subitus fuscum, pedes flavi, alæ limpidae.*

Viridis, parum nitens: oculi rufo-picei: antennæ nigro-fuscae; articulus 1^o. fulvus, basi pallidior: abdomen obscure cupreum, basi subitus fuscum: pedes flavi; coxae virides; tarsi apice fusi: alæ limpidae; squamulae et nervi flava; stigma minutum, concolor. (Corp. long. lin. 3; alar. lin. 1.)

Var. β.—Antennis articulus 1^o. fuscus, basi fulvus: metafemora et metastibiae fulva.

Var. γ.—*Var. β.* similis: metafemora fusca.

Found near London.

SECTIO XXXVII.—Fem.

Sect. XXXVI. similis: alæ lateæ; nervus cubitalis radiali angulum obtusiorem fingens.

Sp. 122. Pter. gracilis. Fem. *Aeneo-viridis, antennæ nigro-fuscae, abdomen cupreum, pedes fulvi, alæ limpidae.*

Aeneo-viridis, parum nitens: caput viride: oculi rufo-picei: antennæ nigro-fuscae: abdomen obscure cupreum, nitens: pedes fulvi; coxae virides; meso- et metatarsi flavi, apice fusi: alæ limpidae; amplæ; squamulae et nervi pallide fulva; stigma minutum, concolor. (Corp. long. lin. 3; alar. lin. 1½.)

Found near London.

SECTIO XXXVIII.

Caput thorace paullo latius: antennæ clavatae, corporis dimidio breviores; articuli 5°. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10°. duplo longior et paullo latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax brevis: abdomen longi-ovatum, acuminatum, subtus non angulatum, apicem versus attenuatum, thorace multo longius: alæ mediocres; nervus cubitalis radiali brevior.

Sp. 123. Pter. dorsalis. Fem. *Viridis, antennæ nigrae, abdominis discus purpureus, pedes flavi, alæ limpidæ.*

Læte viridis: oculi picei: antennæ nigrae, crassæ; articulus 1^{us}. pallide fulvus: abdominis discus et apex obscure purpurea; segmenta basi viridia: pedes flavi; coxae virides; femora et protarsi fulva; meso- et metatarsi apice fusi: alæ limpidæ; squamulæ et nervi fulva; stigma obscurius, parvum. (Corp. long. lin. 1 $\frac{3}{4}$; alar. lin. 2.)

Found near London.

SECTIO XXXIX.—Fem.

Caput thorace latius: antennæ clavatae, corporis dimidio vix longiores; articuli 5°. ad 10^{um}. curtantes et latescentes; clava longi-ovata, articulo 10°. triplo fere longior et paullo latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax brevis: abdomen oblongo-quadratum, thorace paullo longius, non angulatum nec acuminatum: alæ mediocres; nervus cubitalis radiali paullo brevior.

Sp. 124. Pter. subquadratus. Fem. *Cupreo-aeneus, antennæ fuscae, abdomen viridi-cupreum, pedes fulvi, alæ fuscae.*

Cupreo-aeneus, parum nitens: oculi picei: antennæ fuscae; articulus 1^{us}. fulvus: abdomen obscure viridi-cupreum, nitens: pedes fulvi; coxae æneæ; tarsi apice fusi: alæ fuscae; squamulæ et nervi fulva; stigma concolor, minutum. (Corp. long. lin. 3 $\frac{1}{2}$; alar. lin. 1.)

Found near London.

SECTIO XI.—Fem.

Caput thorace latius: antennæ clavatae, graciles, corporis dimidio breviores; articuli 5^o. ad 10^{mm}. curtantes et latescentes; clava ovata, articulo 10^o. latior et duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicua: metathorax brevis: abdomen fusiforme, acuminatum, subtus leviter angulatum, thorace multo longius: alæ mediocres; nervus cubitalis radiali brevior.

Sp. 125. Pter. attenuatus. Fem. *Æneo-viridis, antennæ nigrae, abdominis discus cupreo-purpureus, pedes fulvi, alæ sublimpidæ.*

Æneo-viridis: caput viride: oculi rufo-picei: antennæ nigrae; articulus 1^{us}. basi fulvus: mesothoracis scutellum postice cupreo-aenecum: abdomen læte viride, cupreo-varium; discus obscure cupreo-purpureus: pedes fulvi; coxae æneo-virides; meso- et metatarsi flavi, apice fusci: alæ sublimpidæ; squamulae et nervi fulva; stigma minutum, obscurius. (Corp. long. lin. 1; alar. lin. 1 $\frac{1}{4}$.)

September; Land's End, Cornwall.

Sp. 126. Pter. signatus. Fem. *Niger, P. attenuato brevior, antennæ nigro-fuscæ, abdomen nigro-cupreum, pedes fulvi, femora viridia, alæ sublimpidæ.*

Niger, obscurus: caput thorace paullo latius: oculi picei: antennæ nigro-fuscæ, subclavatae; articulus 1^{us}. basi fulvus; clava articulo 10^o. plus duplo longior non latior: thorax brevis: metathorax nigro-viridis: abdomen nigro-cupreum, nitens, basi læte viride: pedes obscure fulvi; coxae et femora viridia, hæ apice fulva; meso- et metapodium tibiale apice et tarsi flava, hi apice fusci: alæ sublimpidæ; squamulae et nervi fulva, stigma obscurius, minutum. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1 $\frac{1}{4}$.)

Found near London.

Sp. 127. Pter. mundus. Fem. *Æneo-viridis, antennæ fuscæ, abdomen æneo-cupreum, pedes fulvo-fusci, alæ subfuscæ.*

Æneo-viridis, obscurus: caput viride: oculi rufo-picei: antennæ fuscæ; articulus 1^{us}. fulvus: mesothoracis scutellum ænecum:

abdomen æneo-cupreum; segmentum 1^{um}. basi viride: pedes fuscæ; coxæ virides; protibiae et protarsi fulva; meso- et metatarsi flavi, apice fuscæ: alæ subfuscæ; squamulæ et nervi fuscæ; stigma minutum, concolor. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{4}$.)

Found near London.

SECTIO XLI.—Fem.

Sect. XVII. proxima.—Corpus breve, latum: caput thorace latius: antennæ clavatae, corporis dimidii longitudine; articuli 5°. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10°. plus duplo longior vix latior: thorax brevi-ovatus: prothorax brevisimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax brevis: abdomen ovatum, acuminatum, non angulatum, thoracis longitudine: alæ latae; nervus cubitalis radiali brevior.

Sp. 128. Pter. amplus. Fem. *Nigro-æneus, antennæ nigrae, abdomen cupreum, pedes fuscæ, alæ sublimpidæ, stigma minutum.*

Nigro-æneus, parum nitens: oculi picei: antennæ nigrae; articulus 1^{us}. basi fuscus: abdomen obscure cupreum; suturæ viridi-cyanæ; segmentum 1^{um}. lâete viride, cupreo varium: pedes fuscæ; coxæ æneæ; trochanteres, genua et tarsi flava, hi apice fuscæ; protarsi fulvi: alæ sublimpidæ; squamulæ et nervi fulva; stigma minutum, concolor. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{1}{2}$.)

June; Isle of Wight.

Sp. 129. Pter. divisus. Fem. *Cupreo-æneus, antennæ nigro-fuscæ, pedes fuscæ, alæ sublimpidæ, stigma mediocre.*

Cupreo-æneus, parum nitens: oculi rufo-picei: antennæ nigro-fuscæ; articulus 1^{us}. fulvus, apice fuscus: abdomen cupreum; segmentum 1^{um}. cyaneo-viride, cupreo varium: pedes fuscæ; coxæ æneæ; meso- et metapedum genua et tarsi flava, hi apice fuscæ: alæ sublimpidæ; squamulæ et nervi fuscæ; stigma obscurius, mediocre. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{1}{2}$.)

Found near London.

SECTIO XLII.—Fem.

Caput magnum, thorace latius: antennæ subclavatae, graciles, corporis dimidio longiores; articuli 5°. ad 10^{um}. curtantes et paullo latescentes; clava ovata, articulo 10°. latior et duplo longior:

thorax brevi-ovatus, latus, crassus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen brevi-ovatum, subtus convexum non angulatum, thoracis longitudine : alæ latae ; nervus cubitalis radiali paullo brevior.

Sp. 130. Pter. cephalotes. Fem. *Aeneus, abdomen cupreum, antennæ nigro-fuscae, pedes fulri, femora æneo-fusca, alæ sublimpidæ.*

Aeneus : oculi rufo-picei : antennæ nigro-fuscae ; articulus 1^{us}. fulvus, apice fuscus : abdomen cupreum ; segmentum 1^{um}. lète viridi-æneum, apice cupreum : pedes fulvi ; coxae æneo-virides ; femora æneo-fusca ; meso- et metapodum tibiæ fusca, tarsi flavi apice fusi : alæ sublimpidæ ; squamulæ et nervi fulva ; stigma fuscum, parvum. (Corp. long. lin. 1 $\frac{1}{3}$; alar. lin. 1 $\frac{2}{3}$.)

Var. β.—Caput et thorax viridi-ænea.

Var. γ.—Abdominis segmentum 1^{um}. keto viride, cupreo-varium ; sequentia basi viridia.

September ; Isle of Wight.

SECTIO XLIII.—Fem.

Corpus breve : caput thoracis latitudine : antennæ clavatæ, corporis dimidii longitudine ; articuli 5°. ad 10^{um}. minime curtantes et latescentes ; clava ovata, articulo 10°. multo latior et plus duplo longior : thorax brevi-ovatus, crassus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen ovatum, acuminatum, subtus valde angulatum, thorace longius et angustius : alæ mediocres ; nervus cubitalis radiali brevior.

Sp. 131. Pter. servulus. Fem. *Viridis, antennæ nigro-piceæ, abdomen cupreum, pedes flavi fasciati, alæ sublimpidæ.*

Viridis, parum nitens : oculi rufo-picei : antennæ nigro-piceæ ; articulus 1^{us}. nigro-viridis, basi fulvus : abdomen cupreum ; segmentum 1^{um}. lète viride ; 2^{um}. et sequentia subtus et utrinque basi viridia : pedes flavi ; coxae virides ; femora viridi cingulata ; tibiæ fusco cingulatae ; meso- et metatarsi apice fusi ; protarsi fulvi : alæ sublimpidæ ; squamulæ et nervi fulva ; stigma minutum. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

September ; Isle of Wight.

SECTIO XLIV.—Fem.

Caput thorace paullo latius: antennæ clavatae, graciles, corporis dimidio breviores; articuli 5^o. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10^o. latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax brevis: abdomen sublineare, angustum, compressum, acuminatum, non angulatum, thorace duplo fere longius: alæ maximæ; nervus cubitalis radiali multo brevior.

Sp. 132. Pter. eupterus. Fem. *Cyaneo-viridis*, *antennæ fuscæ*, *abdomen nigro-cupreum*, *pedes fuscæ*, *femora viridia*, *alæ limpidae*.

Cyaneo-viridis: oculi rufi: antennæ fuscæ; articulus 1^{us}. fulvus, apice fuscus: abdomen nigro-cupreum; segmentum 1^{um}. basi viride: pedes fuscæ; coxæ et femora viridia, hæ apice fulva; meso- et metatarsi flavi, apice fuscæ; protarsi fulvi: alæ limpidae, amplæ; squamulæ et nervi fulva; stigma obscurius, mediocre. (Corp. long. lin. 1—1½; alar. lin. 1½—1¾.)

Var. β.—*Viridis*: mesothoracis scutellum viridi-cupreum.

Found near London.

SECTIO XLV.—Fem.

Caput thoracis latitudine: antennæ subclavatae, graciles, corporis dimidii longitudine; articuli 5^o. ad 10^{um}. curtantes et paullo latescentes; clava ovata, articulo 10^o. longior et paullo latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax brevis: abdomen ovatum, acuminatum, non angulatum, thoracis longitudine et latitudine: alæ mediocres; nervus cubitalis radiali multo brevior.

Sp. 133. Pter. rusticus. Fem. *Viridi-cupreus*, *P. brevicorni simillimus*, *antennæ nigro-piceæ*, *pedes fulvi*, *femora fusco cingulata*, *alæ sublimpidæ*.

Cupreus, nitens: caput antice et postice viride: oculi picei: antennæ nigro-piceæ; articulus 1^{us}. viridis, basi fulvus: thoracis segmentorum margines virides: abdomen viridi-cupreum; segmentum 1^{um}. micans; discus obscure purpureus: pedes fulvi; coxæ virides; femora fusco cingulata; meso- et metapedum tibiæ fusco-fulvæ; genua et tarsi flava, hi apice fuscæ: alæ sublimpidæ; squamulæ et nervi fulva; stigma fuscum, parvum. (Corp. long. lin. 1½; alar. lin. 1½.)

Found near London.

SECTIO XLVI.—Fem.

Caput thorace paullo latius: antennæ subclavatae, corporis dimidii longitudine; articuli 5°. ad 10^{um}. curtantes et paullo latescentes; clava ovata, articulo 10°. plus duplo longior et paullo latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax brevis: abdomen longi-ovatum, acuminatum, non angulatum, thorace longius et angustius: alæ amplæ; nervus cubitalis radiali brevior.

Sp. 134. Pter. diversus. Fem. *Æneo-viridis, antennæ nigro-fusca, abdomen cupreum, pedes fulvi, femora fusca, alæ limpidae.*

Æneo-viridis: caput viride: oculi rufi: antennæ nigro-fuscae; articulus 1^{us}. nigro-viridis, basi fulvus: mesothoracis scutellum cupreo-viride: abdomen cupreum; segmentum 1^{um}. laete viride, cupreo-varium: pedes fulvi; coxae virides; femora fusca, apice basique fulva; meso- et metapodium tibiæ fusco-fulvae apice flavæ, tarsi flavi apice fuscæ: alæ limpidae; squamulæ et nervi fulva; stigma obscurius, minutum. (Corp. long. lin. 1½—1¾; alar. lin. 1⅔—1⅓.)

Var. β.—*Viridis*: abdomen æneo-viride; segmentum 1^{um}. cupreo-varium; discus purpureus: femora viridia, apice fulva; meso- et metatibiae fusco cingulatae.

Var. γ.—*Viridis*: thoracis discus æneo-viridis: antennæ fuscae; articulus 1^{us}. fulvus, apice supra fuscus: abdominis discus cupreus: femora et tibiæ flava: alis squamulæ et nervi flava; stigma fulvum.

September; Isle of Wight.

SECTIO XLVII.—Fem.

Sect. XX. proxima.—Caput thorace latius: antennæ crassæ, clavatae, corporis dimidii longitudine; articuli 5°. ad 10^{um}. curtantes et latescentes; clava longi-ovata, articulo 10°. paullo latior et plus duplo longior: thorax crassus, brevi-ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax brevis: abdomen ovatum, acuminatum, elevatum, subtus valde angulatum, thorace longius et angustius: pedes validi: alæ mediocres; nervus cubitalis radiali brevior.

Sp. 135. Pter. conifer. Fem. *Aeneo-viridis, antennæ nigrae, abdomen cuprum, pedes fulvi, alæ sublimpidæ.*

Aeneo-viridis: caput viride: oculi picci: antennæ nigrae; articulus 1^{us}. fulvus; 2^{us}. fusco-viridis: abdomen cuprum, nitens; segmentum 1^{um}. lète viride, cupro varium: pedes fulvi; coxae virides; meso- et metatarsi flavi, apice pallide fuscæ: alæ sublimpidæ; squamulæ et nervi fulva; stigma obscurius, minutum. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Found near London.

SECTIO XLVIII.—Fem.

Caput thorace latius: antennæ clavatae, graciles, corporis dimidio longiores; articuli 5°. ad 10^{um}. latescentes, non curtantes; clava longi-ovata, articulo 10°. plus duplo longior, non latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, acuminatum, subtus vix angulatum, thoracis longitudine: alæ mediocres; nervus cubitalis radiali vix brevior.

Sp. 136. Pter. sobrius. Fem. *Cupreus, antennæ nigro-piceæ, abdomen nigro-cænum, pedes fulvi, alæ fuscaæ.*

Cupreus, parum nitens: caput antice viride: oculi picci: antennæ nigro-piceæ; articulus 1^{us}. fulvus, apice fuscus: abdomen nigro-cænum, nitens; basi et apice æneo-viride: pedes obscure fulvi; meso- et metatarsi pallidiores, apice fuscæ; coxae æneæ: alæ fuscaæ; proalæ apud discum obscurores; squamulæ et nervi fuscæ; stigma concolor, minutum. (Corp. long. lin. $\frac{3}{4}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Antennis articulus 1^{us}. nigro-viridis, basi fulvus: abdomen basi cupreo micans: femora et tibiae fusca.

Found near London.

SECTIO I.

Sp. 137. Pter. fusi-cornis. Fem. *Præcedentibus hujus sectionis paullo brevior, caput latius, antennæ et pedes pallidiora.*

Aeneo-viridis, parum nitens: caput viride: oculi rufo-picei: antennæ fuscaæ; articulus 1^{us}. fulvus; 2^{us}. pallide fuscus: abdomen

nigro-cupreum, nitens: pedes pallide fulvi; femora meso- et metatibiae obscuriora; coxae virides; tarsi apice obscure fulvi: alæ limpidae; squamulae et nervi flavae; stigma concolor, minutum. (Corp. long. lin. 1— $1\frac{1}{4}$; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—Thorax aeneus: caput aeneo-viride: antennæ articulus 1^{us}. apice fuscus.

Var. γ.—*Var. β* similis: femora, meso- et metatibiae fusca.

September; near London. Isle of Wight.

SECTIO III.—Subdiv. 2.

Sp. 138. Pter. thalassinus. Fem. *Viridis*, P. megachloro *affinis*, antennæ fusco-fulvæ, pedes fulvi, femora viridi cingulata, alæ limpidae.

Caput thorace vix latius: antennæ subclavatae, corporis dimidio breviores; articuli 5°. ad 10^{um}. curtantes et paullo latescentes; clava ovata, articulo 10°. latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuum: metathorax brevis: abdomen longi-ovatum, acuminatum, non angulatum, thorace longius: alæ amplæ; nervus cubitalis radiali brevior.

Viridis, parum nitens: oculi ocellique rufi: antennæ fusco-fulvæ; articulus 1^{us}. basi fulvus: abdomen nitens; discus obscure cupreus: pedes fulvi; coxae virides; femora fusco-viridi cingulata; meso- et metatarsi pallide flavi, apice fusi: alæ limpidae; squamulae et nervi fulva; stigma fuscum, minutum. (Corp. long. lin. $1\frac{1}{3}$; alar. lin. $1\frac{1}{2}$.)

September; Isle of Wight.

Sp. 139. Pter. bifrons. P. lucido et herbido *affinis*, *abdomen brevius*.

Caput thorace vix latius: antennæ clavatae, corporis dimidii vix longitudine; articuli 5°. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10°. plus duplo longior, non latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuum: metathorax brevis: abdomen longi-ovatum, acuminatum, non angulatum, thorace paullo longius: alæ mediocres; nervus cubitalis radiali multo brevior.

Viridis: oculi rufo-picei: antennæ nigrae; articulus 1^{us}. basi fulvus: abdomen purpureum; segmentum 1^{um}. læte viride, apice purpureum; 2^{um}. et sequentia basi utrinque viridia: pedes pallide

fulvi; coxae virides; meso- et metapodium genua et tarsi pallide flava, hi apice fusi: alae limpidae; squamulae et nervi pallide fulva; stigma obscurius, minutum. (Corp. long. lin. 1 $\frac{1}{2}$; alar. lin. 1 $\frac{1}{2}$.)

Found near London.

SECTIO III.—Subdiv. 4.

Sp. 140. Pter. epimelas. Fem. *Niger, abdomen nigro-cupreum, pedes fusi, alae sublimpidae.*

Caput thorace latius: antennae subclavatae, corporis dimidio breviores; articuli 5^o. ad 10^{um}. curtantes et minime latescentes; clava ovata, acuminata, articulo 10^o. duplo longior non latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicue: metathorax brevis: abdomen ovatum, acuminatum, subtus non angulatum, thorace paullo longius: alae mediocres; nervus cubitalis radialis multo brevior.

Niger, obscurus: oculi picei: antennæ nigræ; articulus 1^{us}. nigro-aeneus: abdomen nigro-cupreum, nitens: pedes fusi; coxae nigræ; trochanteres et genua flava; meso- et metatarsi flavi, apice fusi: alae sublimpidæ; squamulae et nervi fusca; stigma concolor, parvum. (Corp. long. lin. 3—1 $\frac{1}{2}$; alar. lin. 1—1 $\frac{1}{2}$.)

Var. β.—Abdominis segmentum 1^{um}. basi læte viride: femora et tibiae nigro-fusca.

Var. γ.—Var. β similis: antennæ nigro-fuscae.

Var. δ.—Antennis articulus 1^{us}. fuscus, apice niger: abdominis segmentum 1^{um}. basi et metathorax cuprea: femora et tibiae nigra.

Var. ε.—Var. β similis: antennis articulus 1^{us}. fulvus: tibiae fuscae.

September; near London. North Wales.

Sp. 141. Pter. confinis. Fem. *Æneus, præcedente brevior, antennæ fuscae, abdomen nigro-cupreum, pedes flavi, alæ fulvae.*

Æneus: caput aeneo-viride: oculi rufo-picei: antennæ fuscae; articulus 1^{us}. nigro-fuscus, basi fulvus: abdomen nigro-cupreum, basi viride, apice aeneum: pedes flavi; coxae virides; meso- et metatarsi apice fusi: alae fulvae; squamulae et nervi fulva; stigma parvum, obscurius. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{3}{4}$.)

Found near London.

Sp. 142. Pter. exilis. Fem. *Viridis*, P. tenui brevior, antennæ nigro-fuscæ, abdominis discus nigro-cupreus, pedes fulvi, alæ limpidae.

Viridis: oculi rufo-picei : antennæ nigro-fuscæ ; articulus 1^{us}. fulvus, apice fuscus : abdomen æneo-viride, nitens ; discus nigro-cupreus : pedes fulvi ; coxae virides ; meso- et metatarsi flavi, apice fusi : alæ limpidae ; squamulae et nervi flava ; stigma minutum, concolor. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Found near London.

Sp. 143. Pter. stenotelus. Fem. *Æneus*, P. pingui similis, antennæ fuscæ, abdomen cupreum, pedes fulvi, alæ sublimpidae.

Corpus breve, latum : caput magnum, thorace latius : antennæ clavatae, corporis dimidii longitudine ; articuli 5°. ad 10^{um}. curantes et latescentes ; clava ovata, articulo 10°. paullo latior et plus duplo longior : thorax brevi-ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuae : metathorax brevis : abdomen ovatum, acuminatum, non angulatum, thorace vix longius : alæ sat latæ ; nervus cubitalis radiali brevior.

Æneus : caput viride, thorace latius : oculi rufo-picei : antennæ fuscæ ; articulus 1^{us}. fulvus : abdomen cupreum, basi viride : pedes fulvi ; coxae ænæ ; meso- et metatarsi flavi, apice fusi : alæ limpidae ; squamulae et nervi fulva ; stigma minutum, concolor. (Corp. long. lin. 1 ; alar. lin. 1 $\frac{1}{2}$.)

Var. β.—Thorax æneo-viridis : antennæ fusco-fulvae : abdomen viride, subtus æneo-varium ; discus nigro-cupreus : coxae virides.

Var. γ.—*Var. β* similis : thorax viridis : antennæ fulvae : pedes pallide fulvi : alarum squamulae et nervi flava.

Found near London.

Sp. 144. Pter. chrysammus. Fem. *Cupreus*, P. saturati statuta, antennæ graciliores pallidiores, abdominis discus purpureus, pedes fulvi, femora fusco cingulata, alæ fulvescentes.

Caput thorace latius : antennæ clavatae, corporis dimidio breviores ; articuli 5°. ad 10^{um}. curantes et latescentes ; clava ovata, articulo

10°. Iatior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicue: metathorax brevis: abdomen ovatum, acuminatum, subitus non angulatum, thorace paullo longius: alæ mediores; nervus costalis radiali brevior.

Cupreus: caput viridi-aeneum: oculi rufo-picei: antennæ fuscae; articulus 1^{us}. basi fulvus: abdominis discus obscure purpureus: pedes fulvi; coxae aeneo-virides; femora fusco cingulata; meso- et metatarsi apice fusi: alæ fulvescentes; squamulæ et nervi pallide fulva; stigma minutum, concolor. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{2}{3}$.)

Found near London.

Sp. 145. Pter. concisus. Fem. *Viridi-aeneus*, P. tenui brevior, antennæ fuscae, abdominis discus cupreus, pedes fulvi, alæ subfuscæ. P. redacto et confini proximus at angustior.

Caput thorace paullo latius: antennæ clavatae, corporis dimidii longitudine; articuli 5°. ad 10^{um}. latescentes non curtantes; clava ovata, articulo 10°. paullo latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicue: metathorax brevis: abdomen ovatum, acuminatum, non angulatum, thorace paullo longius: alæ angustæ; nervus cubitalis radiali brevior.

Viridis: oculi rufo-picei: antennæ nigro-fuscae; articulus 1^{us}. fulvus, apice nigro-piceus: abdominis discus obscure purpureus: pedes pallide fulvi; coxae virides; meso- et metatarsi pallide flavi, apice pallide fusi: alæ sublimpidæ; squamulæ et nervi flava; stigma fulvum, minutum. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Thorax viridi-aeneus.

Var. γ.—*Viridi-aeneus*: caput aeneo-viride: abdominis discus obscure cupreus.

September; near London. Isle of Wight.

Sp. 146. Pter. balux. Fem. *Cupreus*, antennæ nigro-piceæ, abdomen viridi-aeneum, pedes flavo-fusci, alæ sublimpidæ. P. affini proximus, caput minus, alæ angustiores.

Caput thorace paullo latius: antennæ clavatae, corporis dimidio breviores; articuli 5°. ad 10^{um}. curtantes et latescentes; clava

longi-ovata, articulo 10°. paullo latior et plus duplo longior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuae : metathorax brevis : abdomen ovatum, acuminatum, non angulatum, thorace paullo longius et latius : alæ mediocres ; nervus cubitalis radiali brevior.

Cupreus : oculi rufo-picci : antennæ nigro-piceæ ; articuli 1^{us}. et 2^{us}. nigro-virides, ille basi fuscus : abdomen viridi-æneum, nitens ; disceus purpureo-cupreus : pedes flavi ; coxae virides ; meso- et metapedium femora et tibiae pallide fusca apice et basi flava, tarsi apice fusi ; protibiae et protarsi fulva : alæ sublimpidæ ; squamulæ et nervi fulva ; stigma fuscum, mediocre. (Corp. long. lin. 1 ; alar. lin. 1 $\frac{1}{4}$.)

October ; near London. *

Sp. 147. Pter. pervasus. Fem. *Viridis*, *P. pexati statura, antennæ nigrae, abdomen cupreum, pedes flavi, alæ sublimpidæ.*

Corpus breve, latum : caput thorace paullo latius : antennæ subclavatae, corporis dimidii longitudine ; articuli 5°. ad 10^{um}. curtantes et paullo latescentes ; clava ovata, articulo 10°. plus duplo longior non latior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuae : metathorax brevis : abdomen ovatum, acuminatum, non angulatum, thorace vix longius : alæ mediocres ; nervus cubitalis radiali brevior.

Viridis, parum nitens : oculi rufo-picci : antennæ nigrae ; articulus 1^{us}. nigro-viridis, subtus fulvus : abdomen nitens, cupreum ; segmentum 1^{um}. laete viride : pedes flavi ; coxae virides ; protarsi fulvi ; meso- et metatarsi apice fusi : alæ sublimpidæ ; squamulæ et nervi fulva ; stigma minutum. (Corp. long. lin. 1 ; alar. lin. 1 $\frac{1}{4}$.)

June ; New Forest.

Sp. 148. Pter. hilaris. Fem. *Viridis, antennæ fuscæ, abdomen cupreum, pedes flavi, femora fusco cingulata, alæ albo limpidæ.*

Caput thorace vix latius : antennæ subclavatae, graciles, corporis dimidio vix breviores ; articuli 5°. ad 10^{um}. curtantes, vix latescentes ; clava ovata, articulo 10°. latior et plus duplo longior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum

suturæ vix conspicuæ: metathorax brevis: abdomen longi-ovatum, acuminatum, non angulatum, thorace longius: alæ medioeres; nervus cubitalis radiali brevior.

Læte viridis, nitens: oculi rufi: antennæ pallide fuscae; articulus 1^{us}. fulvus: abdomen cupreum, basi cyaneo-viride: pedes lutei flavi; coxae virides; femora fuscæ cingulata; meso- et metatarsi apice fusi; protarsi fulvi: alæ albo-limpidae; squamulae et nervi pallide fulva; stigma obscurius, mediocre. (Corp. long. lin. ¾; alar. lin. 1.)

Found near London.

Sp. 149. Pter. orbiculatus. Fem. *Nigro-viridis, antennæ nigro-fuscæ, abdomen nigro-aeneum, pedes fusi, alæ limpidae.*

Corpus sublineare, breve: caput thorace vix latius: antennæ perbreves, graciles, clavatæ, thoracis vix longitudine; articuli 5°. ad 10^{um}. latescentes, non curtantes; clava ovata, articulo 10°. latior et plus duplo longior: thorax brevi-ovatus: prothorax brevisimus: mesothoracis parapsidum suturæ vix conspicue: metathorax brevis: abdomen ovatum, acuminatum, non angulatum, thorace paullo longius: alæ latae; nervus cubitalis radiali brevior.

Nigro-viridis: oculi picei: antennæ nigro-fuscæ; articulus 1^{us}. niger, basi fulvus: abdomen nigro-aeneum: pedes fusi; coxae nigrae; femora nigro-fusca; meso- et metapedum genua et tarsi flava, hi apice fusi; protarsi fulvi: alæ subfuscæ; squamulae et nervi fulva; stigma minutum, concolor. (Corp. long. lin. ¾; alar. lin. 1.)

Var. β.—Antennis articulus 1^{us}. nigro-aeneus: abdomen nigro-cupreum; segmentum 1^{nm}. basi viride: coxae nigro-virides; protibiae fulvae.

Var. γ.—Abdomen basi et utrinque viride: coxae et femora viridia.

September; near London. Devonshire. Isle of Wight.

Sp. 150. Pter. fulvipes. Fem. *Cupreus, P. tenui similis, antennæ fuscæ, pedes fulvi, alæ fulvescentes.*

Caput thorace paullo latius: antennæ clavatæ, corporis dimidii vix longitudine; articuli 5°. ad 10^{um}. latescentes, vix curtantes; clava ovata, articulo 10°. latior et plus duplo longior: thorax

ovatus, breviusculus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuae : metathorax brevis : abdomen longiovatum, acuminatum, non angulatum, thorace multo longius : alæ angustæ ; nervus cubitalis radiali brevior.

Cupreus : caput aeneo-viride : oculi picei : antennæ fuscae ; articulus 1^{us}. fulvus, apice fuscus : abdomen viride, basi et subtus cupreo varium ; discus obscure purpureus : pedes fulvi ; coxæ aeneæ ; meso- et metatarsi flavi, apice fusi : alæ fulvescentes ; squamulæ et nervi pallide fulva ; stigma minutum, fuscum. (Corp. long. lin. 1 ; alar. lin. 1½.)

Found near London.

Sp. 151. Pter. longulus. Fem. *P. fulvipede longior, alæ latiores.*

Caput thorace vix latius : antennæ subclavatae, corporis dimidio breviores ; articuli 5°. ad 10^{mm}. paullo latescentes, non curtantes ; clava ovata, articulo 10°. plus duplo longior et paullo latior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuae : metathorax brevis : abdomen subfusiforme, acuminatum, non angulatum, thorace multo longius : alæ mediores ; nervus cubitalis radiali brevior.

Cupreo-aeneus : caput et metathorax viridi-aenea : oculi rufo-picei : antennæ nigrae ; articulus 1^{us}. nigro-fuscus, basi et subtus fulvus : mesothoracis scutellum cupreum : abdomen cupreum ; segmentum 1^{um}. lâte viride, cupreo varium : pedes fulvi ; coxæ virides ; meso- et metapedum genua et tarsi flava, hi apice obscure fusi : alæ sublimpidæ ; squamulæ et nervi pallide fulva ; stigma obscurius, minutum. (Corp. long. lin. 1 ; alar. lin. 1½.)

Found near London.

SECTIO III.—Subdiv. 5. Fem.

Sp. 152. Pter. chrysos. Fem. *Cupreus, antennæ nigro-fuscae, abdominis discus purpureus, pedes fusco-fulvi, femora aenea, alæ sublimpidæ.*

Caput thorace paullo latius : antennæ subclavatae, corporis dimidio longiores ; articuli 5°. ad 10^{mm}. curtantes vix latescentes ; clava ovata, articulo 10°. latior et duplo longior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuae : metathorax brevis : abdomen ovatum, acuminatum,

subtus non angulatum, thorace vix longius: alæ mediocres; nervus cubitalis radiali brevior.

Cupreus: oculi rufo-picei: antennæ nigro-fuscae; articulus 1^{us}. basi fulvus: abdominis discus obscure purpureus: pedes fulvi; coxae et femora ænea; meso- et metapedum tibiæ fusco cingulatae apice flavæ, tarsi flavi apice fusi: alæ sublimpidæ; squamulae et nervi fulva; stigma obscurius, parvum. (Corp. long. lin. 1½; alar. lin. 2.)

Var. β.—Caput viridi-æneum: abdomen viridi-cupreum; discus obscure purpureus.

September; Isle of Wight.

Sp. 153. Pter. comes. Fem. *Præcedenti similis, caput latius, antennæ crassiores, abdomen brevius.*

Viridi-æneus: caput viride: oculi picei: antennæ nigro-fuscae; articulus 1^{us}. fulvus: abdomen cupreum; discus obscure purpureus: pedes fulvi; coxae virides; femora fusco cingulata; meso- et metapedum tibiæ basi et apice pallidiores, tarsi flavi apice fusi: alæ sublimpidæ; squamulae et nervi fulva; stigma parvum, obscurius. (Corp. long. lin. 1½; alar. lin. 1¾.)

September; Isle of Wight.

Sp. 154. Pter. vitripennis. Fem. *Nigro-æneus, antennæ fuscae, pedes fulvi, alæ albo limpidae.*

Corpus breve, latum: caput thoracis latitudine: antennæ clavatae, graciles, corporis dimidio paullo longiores; articuli 5^o. ad 10^{um}. curtantes et paullo latescentes; clava ovata, articulo 10^o. paullo latior et plus duplo longior: thorax ovatus: prothorax brevisimus: mesothoracis parapsidum suturæ vix conspicue: metathorax brevis: abdomen ovatum, acuminatum, non angulatum, thoracis longitudine: alæ latae; nervus cubitalis radiali non brevior.

Nigro-æneus, parum nitens: caput nigro-viride: oculi rufo-picei: antennæ fuscae; articulus 1^{us}. fulvus; 2^{us}. fusco-fulvus: abdomen nitens: pedes fulvi; femora obscuriora; coxae æneæ; meso- et metapedum tibiæ apice tarsique flava, hi apice fusi: alæ albo-limpidae; squamulae et nervi flava; stigma minimum, concolor. (Corp. long. lin. 1; alar. lin. 1½.)

July; near London.

SECTIO XXI.—Fem.

Sp. 155. Pter. obscuratus. Fem. *P. cingulipedis statura, alarum nervi et pedes obscuriores.*

Viridis: oculi rufo-picei: antennae nigro-piceae; articulus 1^{us}. nigro-viridis, basi fuscus: mesothoracis discus æneo-viridis: abdomen cuprum: segmentum 1^{um}. læte cyaneo-viride; 2^{um}. et sequentia basi viridia: pedes flavi; coxae virides; femora et tibiae fusca, apice basique flava; tarsi apice fusi; protarsi fulvi: alæ sublimpidæ; squamulae fuscæ; nervi fulvi; stigma parvum, concolor. (Corp. long. lin. 1½; alar. lin. 1½.)

Var. β.—Abdomen subtus apice cyaneum; segmentum 1^{um}. cyaneum, apice cuprum: femora nigro-fusca, apice basique flava.

June; Isle of Wight.

Sp. 156. Pter. gentilis. Fem. *Læte viridis, antennæ et pedes fulva, abdominis discus purpureus, alæ limpidæ.*

Caput thorace paullo latius: antennæ clavatae, corporis dimidii longitudine; articuli 5^o. ad 10^{um}. latescentes non curtantes; clava ovata, articulo 10^o. latior et duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax brevis: abdomen longi-ovatum, acuminatum, subtus angulatum, thorace longius: alæ mediocres; nervus cubitalis radiali brevior.

Læte viridis, nitens: oculi rufo-picei: antennæ pallide fulvæ; articulus 1^{us}. fulvus, apice fuscus: abdominis discus purpureus: pedes pallide fulvi; coxae virides; meso- et metatarsi flavi, apice fusi: alæ limpidæ; squamulae et nervi fulva; stigma minutum, fuscum. (Corp. long. lin. 1½; alar. lin. 1½.)

Found near London.

Sp. 157. Pter. inclusus. Mas et Fem. *Cupreo-æneus, antennæ nigro-fuscae, pedes fusci aut fulvi, alæ sublimpidæ.*

Mas.—Caput thorace latius: antennæ extrorsum crassiores, corporis dimidio paulo longiores; articuli 5^o. ad 10^{um}. subæquales; clava ovata, acuminata, articulo 10^o. paulo latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax brevis: abdomen sublineare, thorace angustius vix longius: alæ mediocres; nervus cubitalis radiali multo brevior.

Fem.—Caput thorace paullo latius: antennæ subclavatae, graciles, corporis dimidii longitudine; articuli 5^o. ad 10^{mm}. curtantes vix latescentes; clava ovata, articulo 10^o. latior et duplo longior: abdomen longi-ovatum, acuminatum, subtus angulatum, thorace longius.

Mas.—Cupreo-aeneus: caput viride: oculi rufo-picci: antennæ nigro-fuscæ; articulus 1^{us}. fuscus, basi fulvus: mesothorax postice et metathorax cyaneo-viridia: abdomen cupreum, basi cyaneo-viride: pedes fulvi; coxæ aeneæ; trochanteres et genua flava, meso- et metatarsi concolores apice fusi: alæ sublimpidæ; squamulae et nervi fulva; stigma fuscum, parvum.

Fem.—Cupreo-aeneus, parum nitens: caput aeneo-viride: antennæ articulus 1^{us}. niger, basi fulvus: abdomen aeneo-viride; discus obscure cupreus: pedes flavi; coxæ aeneæ; femora nigra; tibiæ nigro-fuscæ, apice basique flavæ; meso- et metatarsi apice fusi; protarsi fulvi. (Corp. long. lin. 1—1½; alar. lin. 1½—1¾.)

Var. β. Mas.—Thorax viridis; discus cupreo-aeneus: femora et tibiæ fusca.

Var. γ. Fem.—Abdomen obscure cupreum; segmentum 1^{um}. viridi-aeneum.

Var. δ. Fem.—Cupreus: caput viride.

September; Teignmouth, Devonshire. Isle of Wight.

Sp. 158. Pter. caligatus. Fem. *Nigro-viridis*, *antennæ nigro-piceæ*, *abdomen nigro-cupreum*, *pedes fulvi*, *femora viridia*, *alæ fuscæ*.

Nigro-viridis, parum nitens: oculi rufo-picci: antennæ nigro-piceæ; articulus 1^{us}. nigro-viridis, basi fuscus: abdomen nigro-cupreum, nitens; segmentum 1^{um}. cupreum, basi late viride: pedes fulvi; coxæ et femora viridia; meso- et metatarsi flavi, apice fusi: alæ obscure fuscæ; squamulae et nervi fusca; stigma minutum, concolor. (Corp. long. lin. ¾—¾; alar. lin. ¾—1.)

Var. β.—Tibiæ fuscæ, basi et apice fulvae.

Found near London.

Sp. 159. Pter. conterminus. Fem. *P. caligato simillimus*, *paullo latior*, *alæ limpidæ*.

Nigro-viridis, parum nitens: oculi rufo-picci: antennæ nigro-piceæ; articulus 1^{us}. nigro-viridis, basi fulvus: abdomen nigro-cupreum,

nitens; segmentum 1^{um}. basi laete viride; pedes fulvi; coxae et femora viridia; meso- et metapedum tibiae fusca; tarsi flavi apice fuscii; alae sublimpidæ; squamulae et nervi fusca; stigma minutum, concolor. (Corp. long. lin. $\frac{2}{3}$ —1; alar. lin. $\frac{3}{4}$ —1 $\frac{1}{2}$.)

September; Isle of Wight.

Sp. 160. Pter. amabilis. Fem. *Cyaneus, antennæ nigro-piceæ, abdomen purpureum, pedes fulvi, alæ limpidae.*

Cyanens, parum nitens: oculi rufo-picci: antennæ nigro-piceæ; articulus 1^{us}. fulvus: abdomen purpureum, nitens; segmentum 1^{um}. late viride, cupreo varium: pedes fulvi; coxae cyaneæ; meso- et metapedum tibiae et tarsi flava, hi apice obscuriores: alae limpidae; squamulae et nervi fulva; stigma minutum, concolor. (Corp. long. lin. 2 $\frac{1}{4}$; alar. lin. 2 $\frac{1}{2}$.)

Found near Paris, by the Comte de Castelneau.

SECTIO XXII.

Sp. 161. Pter. equestris. Fem. *Cupreus, antennæ et pedes fusca, alæ limpidae.*

Caput thorace latius: antennæ subclavatae, graciles, corporis dimidio longiores; articuli 5°. ad 10^{um}. paullo curtantes vix latescentes; clava longi-ovata, articulo 10°. latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuae: metathorax brevis: abdomen longi-ovatum, apice compressum et acuminatum, subtus angulatum, thorace longius: alæ mediocres; nervus cubitalis radiali multo brevior.

Cupreus, parum nitens: oculi rufo-picci: antennæ fuscae; articulus 1^{us}. fulvus, apice obscurior: abdomen nigro-cupreum, nitens; segmentum 1^{um}. viride, cupreo varium: pedes flavi; coxae virides; femora fusca; meso- et metapedum tibiae fusco cingulatae, tarsi apice fuscii; protibiae et protarsi fulva: alæ limpidae, latæ; squamulae et nervi flava; stigma fulvum, minutum. (Corp. long. lin. 1 $\frac{1}{2}$; alar. lin. 1 $\frac{2}{3}$.)

Found near London.

Sp. 162. Pter. simulans. Fem. *P. mesochloro affinis sed brevior aliterque coloratus.*

Caput thorace paullo latius: antennæ graciles, subclavatae, corporis dimidio breviores; articuli 5°. ad 10^{um}. curtantes et paullo

latescentes ; clava ovata, articulo 10°. latior et plus duplo longior : thorax brevi-ovatus, crassus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen ovatum, acuminatum, subtus angulatum, thorace longius et angustius : alæ mediocres ; nervus cubitalis radiali vix longior.

Cupreus, parum nitens : caput æneo-viride : oculi rufo-picci : antennæ fuscæ ; articulus 1^{us}. fulvus : abdomen cupreo-purpureum, nitens, subtus cupreum ; segmentum 1^{um}. læte viride, cupreo varium ; 2^{um}. et sequentia basi utrinque viridia : pedes fulvi ; coxæ et femora ænea ; tibiæ fusco cingulatæ ; meso- et metatarsi flavi, apice fusi : alæ fulvescentes ; squamulae et nervi fulva ; stigma fuscum, parvum. (Corp. long. lin. 1½ ; alar. lin. 2.)

Sp. 163. Pter. Endomychi (Curtis's MSS.) Mas. *Æneus, antennæ nigro-fuscæ, abdomen basi fulvum, pedes fulvi, alæ limpidæ.*

Corpus crassum, latum : caput thorace paullo latius : antennæ subfiliformes, corporis dimidio longiores ; articuli 5°. ad 10^{um}. breves, cyathiformes, subæquales ; clava longi-ovata, articulo 10°. angustior et plus duplo longior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen rhombiforme, thorace brevius ; segmentum 1^{um}. maximum ; sequentia brevissima : alæ sat latæ ; nervus cubitalis radiali multo brevior.

Æneus : oculi rufo-picci : antennæ nigro-fuscæ ; articuli 1^{us}. et 2^{us}. fulvi : abdomen fulvum, nitens, apice æneum : pedes fulvi ; coxæ æneæ ; meso- et metatarsi flavi, apice fusi : alæ limpidæ ; squamulae et nervi fulva ; stigma obscurius, minutum. (Corp. long. lin. 1 ; alar. lin. 1½.)

Reared by Mr. Curtis, from the larva of *Endomychus coccineus*.—(British Entomology, XII. 570.)

ART. XLVI.—*A few Observations on the Habits of some Species of Bees.* By G. R. WATERHOUSE, Curator to the Museum of the Royal Institution, Liverpool.

UPON referring to Kirby's Monograph on the Bees of this country, I find that the male of *Megachile circumcincta* was not known to him ; and not being aware of its having been

described since the publication of that work, I have extracted a few notes from my Memorandum Book relating to that insect, together with some other species of bees, which, I hope, may be acceptable to the Entomological Magazine.

On the 12th of June last, whilst taking a ramble by the side of the river Mersey, I observed a species of *Megachile* in considerable abundance; thinking it might differ from the London species, with which my cabinet is pretty well stocked, I caught a few of them, and to my delight found them to be the same, I believe, as a species which had been shown to me whilst Curator to the Entomological Society, and by the entomologists who possessed it, thought to be a new species, of which the female as yet was not known. I therefore hunted with great diligence in the hopes of finding the female, but at that time without success.

The males were flying about, and occasionally settling on the banks to bask in the sun, or sipping the honey from a little yellow flower—the *Lotus corniculatus* I believe—which was common in the neighbourhood. I never saw them settle on any other flower, though many were in bloom.^a In these same banks I observed many little holes. My digger was of course soon at work, and with success; for two or three nests, constructed in the same manner as those of *Megachile Willughbiella*, sometimes with rose leaves, but occasionally with the leaves of other plants, made their appearance. These nests I took home, and shortly after reared from them specimens of *Megachile circumcincta*. This made me suspect that the bee which I had been catching in the neighbourhood was the male of that insect,—a suspicion which was fully confirmed shortly afterwards upon going to the same place again. The females of *M. circumcincta* were then in abundance, and engaged in making their nests; the males were flying about in the neighbourhood of these nests, and many times gave me ample proofs of their relationship. Several of the pairs I caught. The male embraces the female whilst on the wing, but as they then cannot fly they come speedily to the ground.

The female, *M. circumcincta*, is well known. The insect discovered to be the male very much resembles that of *M.*

^a I mention this fact, because I think it important to ascertain, if possible, what flowers particular species of bees frequent, for many confine themselves, *in a great measure*, to one kind.

Willughbiella, but is rather less; the anterior tarsi, though dilated, are not so broad as in that species. The terminal joint of the antenna is likewise, as in *M. Willughbiella*, larger than the rest, but differs in being rather shorter: the head is furnished with pale brown hair anteriorly, and the vertex with hair of a sooty-black colour: on the thorax and two basal segments of the abdomen, the hair is of a reddish-brown colour, and on the apical segments of the latter, black: the underside of the body is furnished with ashy pubescence. Such is the colouring of the specimens which I afterwards reared,—but the pubescence was nearly of an uniform greyish cast in most of those caught at large. The nests of these insects are generally placed about six inches in the ground, and in a light soil, and consist of three or four cylindrical cells joined end to end. The perfect insect, when hatched, eats its way through the side of the cell near the top. I have reared many specimens of both sexes;—the eggs are laid in June, the insect has undergone all its transformations by the month of September, and remains in a torpid state until the following June.^b I set many specimens at liberty (by opening their cells) in the winter; the room being warm they crawled about pretty briskly, but were not able to fly.

June 19, 1835, caught several specimens of *Cælioxys conica* of both sexes; they were flying about the nests of the *Megachile* above-mentioned, (*M. circumcincta*). I observed a female enter a hole, and was just about to put my net over the place to secure it, when to my surprise a female *Megachile* entered the same hole. It was a minute before either came out; the *Cælioxys* came first but escaped from me; the other I caught.

Sept. 1835, found, upon looking in my breeding - cage, that the larvae which were in the cocoons of the *Megachile* had all assumed the imago state; some few had made their escape from the cells and were found dead in the breeding-cage,—among them there was a specimen of *Cælioxys conica*, also dead.^c From this it is pretty evident that this species of

^b I have reared many species of bees, of both the families *Apidae* and *Andrenidae*, and invariably found that they had undergone all their transformations by the autumn.

^c As this species of *Cælioxys* abounds in neighbourhoods where *M. circumcincta* is not found, it may be thought I make some mistake in the species; hence I will send this, and all other species mentioned in these Notes, to the Entomological Society's Collection, where they may be examined by any entomologist.

Cælioxys is a parasite upon *M. circumcincta*; and I think, likewise, upon *M. Willughbiella*. It is right however to state, that I had cocoons of one other species of bee (*Osmia atricapilla*, on the habits of which I have some remarks to make at some future period), but it must be stated that I never observed the *Cælioxys* go near the nests of that species, which are always found in quite a different situation.

ART. XLVII. — *Entomological Notes.* By EDWARD NEWMAN.

(Continued from Vol. II. p. 516.)

CLASS.—COLEOPTERA.

NATURAL ORDER.—CARABITES, *Newman.*

GENUS.—*ENIGMA*, *Newman.*

Caput punctatum, fere trigonum, prothorace vix angustius; oculis exstantibus: labrum rotundatum, elongatum, mandibulas tegens: mandibulae elongatae acutæ, fulciformes, occultæ, unidentatae: maxillæ falcatae, acutæ; galea, articulo terminali elongata; maxipalpi articulo tertio elongato, quarto breviore, apicali complanato clavato, truncato: labium medio profunde excavatum, lateribus elongatis exstantibus, acutis; ligula rotundata, integra, elongata; labipalpi articulo penultimo elongato, apicali breviore, robustiore, truncato: prothorax punctatus, cordatus, posticè truncatus: elytra elongata, penè linearia, nonnihil truncata, posticè membrana marginali diaphana, octo-striata, punctorum binis ordinibus inter strias: metalæ patefactæ ad volandum aptatae: pedes breves, tarsi breviores, simplices non nihil cylindrici.

Sp. Iris. *Violacea*, *hirsuta*, *ore*, *antennis*, *oculis pedibusque nigris*. (Long 1 unc.; lat. 3 lin.)

This beautiful insect has, at first sight, so exactly the appearance of a large *Leistus* or *Nebria*, that I at once supposed it intermediate between those genera and *Calosoma*. A second glance, however, and an examination of its mouth, prove this idea to be wholly erroneous, and point out its relationship to the genera *Anthia* and *Graphipterus*; and it is between these and *Catascopus* of Kirby that it must

take its station. In this place, I find in the "Catalogue des Coléoptères," an insect which is described in the Supplement to the Count Dejean's "Species des Coléoptères," p. 455, that very nearly agrees with the insect before me; and what is rather remarkable, it bears the very name (*Eucheila*) which I intended to employ. There was, however, so evident a difference in magnitude, colour, and habitat, that I carefully went over the characters again, and found this important difference—*Eucheila* has the apical joint of the maxillary feelers cylindrical; *Ænigma* has the same joint flattened, clavate, and truncate. *Ænigma* may therefore with propriety be placed between *Catascopus* and *Eucheila*.

Ænigma iris was received from New Holland by Mr. Bowerbank, and has been presented by that gentleman to the Entomological Club. Its length is rather less than an inch, and its breadth rather more than a quarter of an inch. Its colour is the most lovely violet, which however varies on the slightest alteration of position. Over the whole surface of its head, prothorax, elytra, and legs, are scattered short hairs of a pale yellow colour.

CLASS.—NEUROPTERA.

NATURAL ORDER.—PERLITES, *Newman*.

GENUS.—CHLOROPERLA, *Newman*.

Sexuum amborum alis pariter repandis, pariterque abdomen tegentibus: telo setis duabus instructo; proalæ nervo subcostali cum costali parallelo.

In July, 1833, I described a new insect, under the name *Isogenus Nubecula*, distinguishing it as a genus from *Perla*, by the circumstance of the wings being of full length in both sexes; whereas, in the true *Perlae*, they are abbreviated in the male. The present genus, *Chloroperla*, or green *Perla*, is so named from the species having invariably a sea-green tint. It is readily distinguished from *Perla* by its having the wings in both sexes fully developed, as in *Isogenus*. It is separated from *Isogenus* by the nervures of its fore wings; the costal and subcostal nervures in *Chloroperla* running parallel throughout their length, whereas in *Isogenus*, and also in *Perla*, the subcostal approaches and all but joins the costal nervure rather

beyond the middle. The number of transverse nervures uniting these two longitudinal ones is various; but in *Isogenus* and *Perla* it varies between twelve and eighteen; in *Chloroperla* between three and six. From *Nemoura* the genus *Chloroperla* sufficiently differs, in its possessing the two caudal setæ. Of this genus there are several species inhabiting this country, of which the most abundant are the *C. viridis* of Fabricius, and the *C. lutea* of Latreille. There is also a minute species, which abounds in Herefordshire, frequenting the alders by the sides of the trout streams:^a—it is a most transparent, delicate little creature.

Chlo. apicalis. Tota luteo-viridis, oculis antennarum apicibusque nigerrimis. (Long. 3 lin.)

Entirely of a pale delicate green, with the eyes and extreme portions of the antennæ intensely black.

ART. XLVIII.—*Notes on the Cheese and Bacon-Hoppers and the Cheese-Mite.*

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—I hope that you will excuse the liberty that I have taken in addressing this letter to you; but if you think the following observations upon those pests (as they sometimes are) of the larder and the dairy, the cheese and bacon hoppers, and the cheese-mite, worthy a corner in your interesting miscellany, they are at your service.

I am very much delighted with natural history in general, especially with that branch of it treating upon insects, their habits and dispositions, and I have observed with pleasure the great interest taken in it by all classes of persons; a certain proof of this is the increase of works treating upon natural productions, especially of those written in a popular manner, and adapted for general readers. It should be a rule with the authors or editors of such works to be the more guarded in their expressions and descriptions in proportion as they depart from scientific detail, as an error is more easily impressed

^a Common in like situations near Nantes.—ED.

upon the mind of a first beginner than upon one that possesses the capability of rectifying it.

I am led to the above remarks, by observing an error in a work (the general execution of which I am very much pleased with) now in course of publication. The article to which I allude is in the British Cyclopædia, Division III. on Natural History, Vol. II. p. 8, "Cheese-hopper, or Cheese-mite," in which the editors have confounded the larva of a dipterous insect with an apterous one (*Acarus lactei*). The error commences in the very heading of the article, by using the conjunction "or;" had they used "and," it would have been intelligible, but the name of such insect should have been the head of a separate article. It then proceeds to give an interesting account of the cheese-hopper only, for the greater part of the article. Afterwards it says,—"Shortly after which the grubs are hatched, and feed upon the cheese, causing it to decay; the fine powder which we perceive, and which is so highly prized by the gourmand, being nothing else but the excrement of the grubs." The second part of the above quotation relates to the cheese-mites alone, as it is a well-known fact, that when a cheese is infested with the hoppers there is no powder, but, on the contrary, a moisture; now a cheese that is attacked by the mites is always powdery, wherever they harbour. Any dairy-maid knows that if the cheese is not well pressed to separate the whey entirely from the curd, it will be much more liable to the attacks of the hopper-fly than if it had been pressed as it ought to have been. They also call a cheese that is decayed by having maggots in it, "the wet rot," in contradistinction to the "dry rot," which the mites generally, but not always, accompany. There is also a very great difference in the attack of the two insects—the hoppers being always found in the interior of the cheese without any visible external aperture; the mites are as constant to the exterior, and never penetrate into the inside (unless there are cracks in the cheese) until the outer part where they are is entirely consumed. The flies that I have succeeded in rearing from the larva, both in cheese and bacon, vary considerably from the one described by the editors before-mentioned. But perhaps there are several species, or even a family, the larvae of which possess similar saltatorial powers, and feed on the same sort of food, although I have met with but one species. They state, that some time after

the grub has assumed the chrysalis state, it becomes of a black colour; now I have constantly found the case of the pupa of a chestnut brown, both when the pupa was inclosed, and after it had extricated itself from its envelope. The fly is also described as of the size of the common domestic fly, and of a blackish-green colour, shining. My specimens are glossy as well as that above-described, but the size is only from two to three lines in length, and of a slighter make in proportion than the domestic fly; the colour is a light liver-brown, with a reflection of bronze; they are so very different from any other flies that are found in houses, that a person who is acquainted with them knows them easily, even at the distance of three or four yards. They in general appear in the month of May, or beginning of June, according to the forwardness of the spring or summer.

As I have heard many persons complain that it was impossible to preserve bacon from the attacks of the hopper, it perhaps may not be uninteresting to in-door economists to relate the manner in which I save my bacon, and preserve it uninjured even to the next summer, if required, and also an occurrence that has confirmed me in its efficacy. As soon as the flitches are dry, after being hung to not later than the last week in April, I prepare some bags of strong brown paper, large enough to hold one gammon or ham, and a little of the open end to spare. I then separate the hams and gammons from the middles, put them into the bags, and either tie the neck of the bag up quite close, or else double it and sew it through the doubled part, taking care that there are no holes in the bags occasioned by tying them up, and never uncovering them again until they are wanted for use, and then only the particular one that is required. The occurrence alluded to above happened a few years ago. A neighbour asked me to permit him to dry three hams in my kitchen, as his was very low and confined. I accordingly consented—the hams were brought—but whether through bad management in the salting or not I cannot tell; (it was certainly rather late in the season when they were cured;) however, before they had hung three weeks, I could perceive a quantity of flies hovering about them. In another fortnight or three weeks they literally swarmed in the kitchen, and penetrated to every room in the house full as much as the domestic fly. I began to tremble with

apprehension for my own hams. I had papered them up before the others were brought ; but I feared that there was some small hole or crevice that had escaped my observation at the time, through which the female fly might have introduced her ovipositor and laid her eggs upon the inclosed ham. The middles of the flitches that I had cut them from were hanging uncovered all the time ; but I have never observed the hoppers, either then or at any other time, attack that part, unless it has been badly salted, which I very much doubt was the case with the hams in question. I desired the owner to come for them, and cut the parts that might still be sound separate from the remainder and paper them up. We began to cut them, when I found that the hoppers had penetrated* in the interior, along the bones and between the muscles, to that degree, that we could not cut a single piece larger than a man's fist from any part of them. I believe, that had they been left another fortnight or three weeks longer, it would have been impossible to have cut a slice free from the maggots. The pieces that we had cut out were papered up carefully to try to prevent any further attacks until they were used. They were taken home, and I was told that there was not one hopper to be seen in any of them when they were used. I had occasion soon after to cut up one of the hams that I had covered previous to the occurrence related above. I took down the one that was hanging nearest to the hams in question, when I was agreeably disappointed to find not one hopper in it. This was before the flies had disappeared from the kitchen entirely, but they were very much diminished in number. As the ham was not all used directly, a few of the flies that remained laid their eggs in it, and they were hatched into grubs before it was finished. The remaining ones I did not open until two or three months afterwards, when I had the pleasure to find them also thoroughly free from the appearance of the larva ; which I consider was a certain proof that covering them in the manner before related is an effectual guard from the attacks of the hopper. It will not do to cover only the fleshy part of the hams, leaving the hock exposed, as I have seen many persons do, but they must be covered entirely. The foregoing fact, I can assure you, is nothing but the plain unvarnished truth.

I remain, yours &c.

J. B——N.

Feb. 13, 1836.

ART. XLIX.—*List of Entomological Works.*

1. *British Entomology*; by John Curtis. Nos. 139—146, July 1835, to March 1836.
2. *Illustrations of British Entomology*; by J. F. Stephens. Nos. 78, 79. October, November, 1835.
3. *A Manual of Entomology, from the German of Dr. Hermann Burmeister*; by W. E. Shuckard, M. E. S. With original Notes and additional Plates. Nos. 9—18. (completion.)
4. *The System of Zoology, Vol. III. being a Treatise on the Natural History and Classification of Quadrupeds*; by William Swainson, Esq.
5. *Transactions of the Zoological Society of London*. Vol. I. Part 3. 1835: *On Nyctcribia, a Genus of wingless Insects*; by J. O. Westwood, Esq. F.L.S. &c.
6. *Researches in Zoology, illustrative of the Manners and Economy of Animals; with Descriptions of numerous Species new to Naturalists; accompanied by Plates*; by John Blackwall, F.L.S. &c. 1835.
7. *Illustrations of the Botany and other Branches of the Natural History of the Himalayan Mountains, and of the Flora of Cashmere*; by J. Forbes Royle, Esq. F.L.S., G.S. &c. Part 7. 1835.—This number contains coloured figures of some undescribed East Indian insects.
8. *Transactions of the Entomological Society of London*. Part 2. 1835.
9. *The Magazine of Natural History*; conducted by J. C. Loudon. London: Longman. 1835, 1836. Monthly Nos. 53—59. 1. *Description of the Young of the common Lobster*, &c.; by T. Brightwell, Esq., F. L. S. 2. *A descriptive Catalogue of the Insecta Myriapoda, found in Berwickshire*;

by George Johnston, M.D. &c. 3. *Illustrations in British Zoology, &c.; by the same.* 4. *On a Species of Eury nome, and on other Crustacea; by S. Hailstone, jun. Esq.* 5. *On the Lepidopterous Insects of Switzerland; by P. J. Brown, Esq.*

10. *Monographie des Braconides de Belgique; par C. Wesmaël.* Bruxelles, 1835.

11. *Enumération des Entomologistes vivans, suivie de Notes sur les Collections Entomologiques des principaux Musées d'Histoire Naturelle d'Europe, sur les Sociétés d'Entomologie, sur les Recueils périodiques consacrés à l'Etude des Insectes, et d'une Table alphabétique des Résidences des Entomologistes; par G. Silbermann.* Paris, 1835.

12. *Mémoires de la Société de Physique et d'Histoire Naturelle de Genève.* Tome VII. Partie 1. Genève, 1835. 1. *Mémoire pour servir à l'Histoire de la Chenille du Hamac, Tinea Harisella, Linné; par Pierre Huber.* 2. *Description de quelques nouvelles Espèces d'Insectes du Bassin du Léman; par F. J. Pictet.*

13. *Clavis novi Hymenopterorum Systematis adjecta Synopsis Larvarum ejusdem Ordinis Scandinavianarum Eruciformium a Gustavo Dahlbom.* Lundæ, 1835.

14. *Report on the Geology, Mineralogy, Botany, and Zoology of Massachusetts; by Professor Hitchcock.* Amherst, 1835.—This volume contains a list of the animals of Massachusetts—the Crustacea by Augustus A. Gould, M.D.—the Araneides by Professor N. M. Hentz—and the Insects by Thaddeus William Harris, M.D.

15. *Histoire Naturelle des Lépidoptères, ou Papillons de France; par Godart, continuée par M. Duponchel.* Tome IX. Nocturnes, Tome VI. Livraisons 5—11. Supplément, &c. Tome I. Livraisons 18—27. Tome II. Livraisons 1—3. Paris, 1835.

16. *Iconographie des Chenilles, &c.; par M. Duponchel.* Tome I. Livraisons 13—15. Paris, 1835.

17. *Catalogue des Coléoptères de la Collection de M. le Comte Dejean.* Livraison 4. Paris, 1835.

18. *Icones Historiques des Lépidoptères nouveaux ou peu connus ; par le Docteur Boisduval.* Livraisons 31—38. Paris, 1835.
19. *Collection Iconographique et Historique des Chenilles, &c. ; par MM. Boisduval, Rambur et Graslin.* Livraisons 31—38. Paris, 1835.
20. *Revue Entomologique de M. Silbermann.* Tome III. Strasbourg, 1835.
21. *Magasin de Zoologie ; par F. E. Guérin.* 5^e. année. Paris, 1835.
22. *Suite à Buffon, &c. Introduction à l'Entomologie ; par M. Lacordaire.* Tome I. Paris, 1835.
23. *Iconographie, &c. des Coléoptères d'Europe ; par M. le Comte Dejean et M. J. A. Boisduval.* Tome IV. Livraisons 9, 10. Paris, 1835.
24. *Tableaux Synoptiques des Lépidoptères d'Europe, &c. ; par MM. de Villiers et Guénée.* Tome I. Livraisons 1—5. Paris, 1835.
25. *Genera des Insectes, &c. ; par MM. E. Guérin et A. Percheron.* Livraisons 2, 3. Paris, 1835.
26. *Iconographie du Règne Animal de M. le Baron Cuvier ; par M. F. E. Guérin.* Livraisons 40, 41. Paris, 1835.
27. *Monographie des Cétoines et Genres voisins, &c. ; par M. H. Gory et M. A. Percheron.* Livraisons 8—10. Paris, 1835.
28. *Histoire Naturelle des Lépidoptères ; par M. Boisduval. Faisant partie des Suites à Buffon.* Tome I. Paris, 1835.
29. *Bulletin Zoologique, publié par Guérin.* Troisième Section—Entomologie.

30. *Entomographien, par Eschscholtz ; traduite en Français.* 1 Vol. Paris, 1835.
31. *Annales de la Société Entomologique de France.* Tome IV. Trimestres 1—3. 1835.
32. *Die Wanzenartigen Insecten. Getren nach der Natur abgebildet und beschrieben von D. Carl. Wilh. Hahn. ; Dritter Band, Erstes Heft. Mit sechs fein ausgemalten Tafeln.* Nürnberg, 1835.
33. *Die Arachniden. Getreu nach der Natur abgebildet und beschrieben von D. Carl. Wilh. Hahn. ; Zweiter Band. Sechstes Heft. Mit sechs fein ausgemalten Tafeln.* Nürnberg, 1835.
34. *Histoire Naturelle et Iconographie des Insectes Coléoptères ; par F. de Laporte, Comte de Castelnau, et H. Gory. Livraisons 2—4.* Paris, 1835.
35. *Schöenherr Synonymia Insectorum. Genera et Species Curculionidum. Tomus III. Pars 2. Parisiis, Lipsiae,* 1836.
36. *Recueil des Actes de la Séance publique de l'Académie Impériale des Sciences de St. Pétersbourg, 1835. Prodromus Descriptionis Animalium ab H. Mertensio observatorum ; par M. J. F. Brandt.*
37. *Nouvelles Annales du Muséum d'Histoire Naturelle.* Tome IV. Livraisons 2, 3. Paris, 1835. 1. Mémoire sur les Métamorphoses des Coléoptères ; par W. de Haan. 2. Rapport sur le Cirron de la Gale (*Acarus Scabiei*) ; par M. de Blainville.
38. *Suites à Buffon. Histoire des Insectes Hyménoptères ; par M. le Comte Amédée Lepeletier de Saint Fargeau.* Tome I. Paris, 1836.
39. *Beitrag zur Lehre von der Geographischen Verbreitung der Insecten, insbesondere der Käfer, von Dr. und Prof. G. C. Reich, in Berlin. (Acta Acad. Coes. Leop. Carol. Nat. Cur. Vol. XVI, P. 11.)*

40. *Verzeichniss aller in Europa vorkommenden geschlechter der Insekten nach Latreille's System. Geordnet von Craft Ernst Hofmann. München, 1834.*
41. *A general and systematic Treatise on Insects; by James Wilson, F. R. S. E., M.W.S., &c. Edinburgh, 1835.*
42. *M. Brandt, Bemerkungen über die Mundmagen-oder Eingeweidenerven (Nervus sympatheticus seu Nervi reproductorii) der Evertebraten. Mémoires de l'Académie Impériale des Sciences de St. Petersbourg. Série VI. Tome III. 1835.*
43. *Observations on the Compound Eyes of Insects; by Rudolph Wagner, Professor in Erlangen.—(Lond. and Edinb. Phil. Magazine, VIII. 46, 202. March, 1826.)*
44. *Medical and Physical Researches, &c.; by R. Harlam, M.D. &c. Philadelphia, 1835. — This work contains descriptions and figures of some new species of Crustacea, &c.*
45. *Disquisitiones Animalium Vertebris carentibus in Ovo formatione, de Generatione Insectorum in Ovo. Livraison I. Frankfort, 1835.*
46. *Nomenclator Entomologicus; par M. Herrich Schäffer. Paris.*
47. *Deutschlands Insecten; par M. Herrich Schäffer. Paris.*
48. *Crustaceen, Myriapoden, und Arachniden; par M. Herrich Schäffer. Paris.*
49. *Conspectus Tenthredinidum, Siricidum et Oryssinorum Scandinaviæ; a Gustavo Dahlbom. Havnæ.*
50. *Annales des Sciences Naturelles. Tome II. III. et IV. Paris, 1834, 1835.*
51. *The Zoological Journal, No. 20. 1835.*
52. *Mémoires de la Société Impériale des Naturalistes de Moscou.—(Parties Entomologiques des 6 Volumes parus.) Paris, 1835.*

53. *Insectes nuisibles à la Vigne ; par D. Salvador Lopez. Madrid, 1835.*

54. *Runde, Brachelytrorum Species Agri Halensis. Hale, 1835.*

55. *Bericht über die Fortschritte der Entomologie im Jahre, 1834, von H. Burmeister.*

ART. I.—*Varieties.*

40. SIR,—In your notices of recent captures, in the last number of the Magazine, *Papilio Podalirius* and *Colias Europome* again make their appearance. Whether or not it is really matter of any importance to know correctly what insects are indigenous, I shall not now inquire; but all who, from want of opportunities for more extended observation, confine their notice to those of our own islands, will agree with me in wishing that some care should be used to ascertain which are truly British—not only as regards the *species* generally, but as to *specimens* also—by which our knowledge of doubtful species must be governed. A censure passed on all dealers, would be not merely illiberal, but unjust to many honest and worthy individuals: but the interest which the present widely diffused taste for Entomology has excited, has certainly roused the cupidity of some who make a profit by imposing on the credulity of collectors; and prudence might suggest that their declarations should be received with the same kind of reverence as those of horse-dealers. That *Podalirius* has been taken in England seems now well established, and it would be difficult to prove that those said to have been taken last season in the New Forest were not so; but it would be satisfactory to have better authority than a nameless dealer.

At page 530, Vol. I. of the Magazine, we see that “*Colias Europome* has been noticed in the meadows, near the confluence of the Avon and Severn, flying with great swiftness in August; but is a rare insect near Worcester.” Also, “*C. Chrysotheme*, rare near Worcester, in the cabinet of Mr. A. Edmonds.” In your last number, Mr. Newman, (taking no notice of the reputed *Chrysotheme*,) says a pair of *Europome* are in the possession of Mr. Edmonds, of Worcester. The gentleman by whom *Europome* was first recorded as above, as being known at Worcester, has since said that his authority for inserting it in his list, was, the having, in 1820, seen “*a brood*” of them, “flying with very great swiftness,” near Tewkesbury. Of the pair now in Mr. Edmonds’s collection I know nothing—but I know of four or five other pairs of it, which are, or were lately, in

cabinets in Warwick and Worcester shires; and which were all procured, a little more than two years ago, from a dealer who assured me that they had been taken in abundance in the neighbourhood of York. Being somewhat sceptical, I made inquiry, the result of which was that they had been seen at York, but only in the boxes of this dealer, who there asserted that they were taken at Manchester; and thus succeeded in selling a pair of them as *Hyale*.

To show the facility with which the cabinets of the credulous may be enriched by dealers, I will add that I very lately saw a box containing specimens of *Mancipium Daplidiceæ*, *Argynnus Lathonia*, *Vanessa Antiopa*, *Lycæna Virgaureææ* and *Chryseis*, *Deilephila Euphorbiææ* and *Lineata*, *Catocala Fraxini*, &c. &c., some of them in considerable numbers, with tolerably respectable looking pins, and all, of course, warranted British. Ere long these will have been admitted into different cabinets, and your pages may probably have to record their occurrence in the different localities assigned to them by the dealer.

I am, Sir, yours, &c.

Birmingham, February, 1836.

THOMAS MARSHALL.

41. SIR,—The Entomological Magazine of July last (No. 12) contains a somewhat circumstantial statement of the “singular fact,” of a perfect male and female of *Saturnia pavonia-minor* being produced from a single “very fine larva,” to the great astonishment of their possessor. I then took for granted that more would be said upon the subject of so surprising a phenomenon; but time has rolled on—two more Fire-flies have been suffered to enlighten the land—but not a ray has fallen upon the “singular fact.” Of course, therefore, it is considered to be sufficiently clear, and should not be doubted. Unfortunately, however, all have not equally comprehensive minds, and my attention having recently been recalled to the subject by an application from a young friend for my opinion as to how such a wonder could be accounted for, I found myself somewhat posed. A doubt of the occurrence was not to be entertained, when it was recollect ed under what auspices it was introduced to the world. On referring to the original, I see that it is entitled “Two pupæ of *Saturnia* in one cocoon,” as if two animals had, for economy’s sake, sheltered under one blanket, which would have been natural enough; but this is not borne out by the context, whence I suspect that the Editor, like myself, did not fully comprehend the account. The statement itself is entirely at variance with its title. It expressly affirms that the cocoon was formed by *one* very fine larva, and that from it emerged a male and female of the species in great perfection. The relator witnessed the “most singular fact,” having called upon

the possessor a few days afterwards, and "made such inquiry as to be fully satisfied that no other insect of the kind, in either state, could have gained admission into the box where the larvæ (? larva) had been deposited to undergo its transformation." Here all is clear and intelligible : a single larva formed its cocoon, and two moths emerged from it. Now, although we are bound to believe that which is put forth in the Magazine, gravely, and without comment, or even a single ! (which surely implies that it is almost a matter of course, as when a really wonderful thing is given three notes of admiration can be afforded; see Vol. I. p. 318,) yet I think we have a right to request that you will endeavour to obtain some more particulars, to enable dull brains, like mine, to comprehend it. Had the larva two heads, and two sets of legs, or only one of each ? Is it known whether the division took place when the larva changed to pupæ, or when the pupa changed to moths ? Is the cocoon preserved ? Has it been opened ? Does it contain one or two exuviae ? If one, what is its appearance ? generally the head, eyes, antennæ, wings, feet, and segments of the abdomen may be traced on the skin of the pupa. How are they arranged here ? If the possessor cannot answer these questions, pray do try to induce some of your learned friends to give us a plausible, probable, or even possible theory, that we may have some ground for our faith. My old-fashioned prejudices have said that the successive changes in the larva, and from larva to pupa, and from pupa to imago, are but as the casting off of so many garments, within which the imago was from the first encased, every part in its appropriate place, as I have often fancied I could see in the Lepidopterous pupæ.—Are these mere fancies ? Does the larva contain merely an homogeneous pulp, which, if it be but sufficiently abundant, may be elaborated into two flies instead of one ? If not, then how are we to suppose that the two animals were disposed in the one skin ? Were they placed head to tail, or side by side, or one within the other ? Had the last been the case, one would think the inner one would have burst the other when making its escape—they must therefore have been severally contained within the caterpillar's skin. Had it a double set of spiracula, or how could breathing be carried on by both ? Must it have had two mouths, or could one communicate with two alimentary canals ? Is it probable — but so many questions suggest themselves that I shall tire your patience ; and, as I am sure you know all that I would ask, I will conclude by again begging that you will, by some means or other, gain further information on so very interesting a subject.

I am, Sir, yours, &c.

Birmingham, February, 1836.

THOMAS MARSHALL.

INDEX GENERUM, &c.

- Acanthocephala, 380.
 Acanthonotus cristatus, 432.
 Acanthosoma (crustacea) hystrix, 432.
 Acanthosoma picta, 308.
 Acarida, 15.
Achatia pumicarpa, 308.
Achatina Oahensis, Stewartii, 304.
Acherontia Atropos, 416.
 Acidia, 83.
 Acinia, 75.
Acinos vulgaris, 308, 309.
 Aciura, 72.
Acosmicta lineola, 151.
Aerocera globula, 150.
Egeria tenuiformis, 285.
Egilips, 160.
Enigma Iris, 499.
Eloothrips, 441.
Eshma teretiuscula, 151.
 Affinity, 8.
 Agathis, 22.
Agonum 6-punctatum, 154.
Agriotypus armatus, 412.
Agrotis hortorum, 286; radiola, 149.
Allantus microcephalus, 157.
 Alligators, 418, 419, 420, 426.
 Allotria, 170.
 Amorphia, 16; Adermata, 16; Dermata, 17.
Amphistoma, 399.
 Analogy, 8, 9.
Anaspis, 459.
Anax formosa, 151.
Ancylus, 21.
 Animals, origin of Entozoa in the bodies of, 379.
Anisodactylus paciloides, 154.
Anisomorpha, 16.
 Anisopoda, 15.
Annales de la Société Entomologique de France, 302, 508; des Sciences Naturelles, 509.
 Anomoia, 80.
Anser palustris, 291.
Anthophora retusa, 313.
Anticea derivata, 288.
Apathus rupestris, 157.
Apatura Iris, 285.
Aphis, cabbage, 406; cherry, 406; cow-slip, 208; hazel, 406; lime, 405; notes on, 405; oak, 405; *Persicae*, 415; white water lily, 406.
Aphites, 338.
- Aphodius fortunatus, 413.
Apis mellifica, 17.
Apoderus Avellanae, 153.
 Appendix to Captain Sir John Ross's Voyage, 427.
 Aptera, 15.
Apterina, 316, 318, 325.
Aptinothrips, 444, 445.
 Arachniden, Hahn's, 102.
 Arachnoida, 15.
 Arctic fox, 430.
Argynnus Adippe, 285.
Argulus armiger, 454.
Argyra, 181.
 Army of fish devoured by alligators, 420.
Ascalaphus Italicus, 462.
Ascaris labiata, 401; lancea, 396; lumbricoides, 382, 383, 384, 399, 400, 401; mystax, 395; vermicularis, 382.
Ascidiae, 172.
Asilites, 424.
 Assembling of certain insects, 207.
Asstacus fluviatilis, 294, 298.
Ateuchus sacer, variolosus, 377.
Athalia spinarum, 340.
Atherix immaculata, 180; melæna, 180.
Atropa belladonna, 318.
Attelabus curcilionoides, 153, 288.
 Andouin's Histoire Naturelle des Insectes, 101.
Auricula Owaihensis, sinistrorsa, 304.
- Bacon-hoppers, 502—504.
Baculus, 342, 343.
 Bartram's Travels through Carolina, Georgia, and Florida, 417.
 Bear, Polar, 429.
 Bee hunt, 281, 423.
 Bees, 423; observations on, 496.
Belothrips, 444, 450.
Bembex, 464.
Bembidia, 457.
Berosus æriceps, 150; *globosus*, *luridus*, 151.
Bipes, 458.
 Bites of Insects, 104.
Blacus, 39, 44.
Boarmia abietaria, *crepuscularia*, *punctularia*, *strigularia*, *tetragonaria*, 288.
 Boisduval's Collection des Chenilles d'Europe, *Icones des Lépidoptères d'Europe*, 507.

- Bolitophila fusca, 180; maculipennis, 179.
 Bombycia viminalis, 151.
 Boothia, animals of, 428, 429.
 Borborus, 316, 318, 320; equinus, 335.
 Botaurus stellaris, 292.
 Bothriocerpalus, 399.
 Brachinus crepitans, 150, 154; Graecus, 377.
 Brachycerus algirus, barbarus, undatus, 465.
 Brachygaster minutus, 415.
 Bracon, 22.
 Bridgewater Treatise, Kirby's, 292.
 British Entomology, Curtis's, 100, 301, 505; Stephens's, 100, 301, 505; species of Spheroceridae, 315.
 Bugong moth, 212.
 Buprestis vittata, 108.
 Butterflies, North American, 423.
 Buzzard, 291.
 Bythrus pilula, sericea, 155.
 Cabinet and books, Professor Studer's, 102.
 Cactus opuntia, 425, 426.
 Callithrix, 6.
 Callomyia antennata, elegans, speciosa, 181.
 Calosoma europunctatum, 376.
 Calyptus, 128.
 Campanula hederacea, 150.
 Campylis dispar, 153.
 Capture of Colias hyale, 416; of Sphinx convolvuli, 416.
 Captures at or near Worcester, 410.
 Carabus, 459; catenulatus, 150; Preslii, 376.
 Caradrina alsines, ambigua, cubicularis, glarcosa, sepii, 151.
 Carcinus Mænas, 452.
 Cardiochiles, 145.
 Carduelis spinus, 291.
 Catalogue des Coléoptères, Dejean's, 507; of animals of Boothia, 428, 429.
 Catocala Fraxini, 314; nupta, 416.
 Cattle, husk in, 433; remedies for, 435—438.
 Cebus, 6.
 Cecidomyia producta, 179.
 Centaurea nigra, scabiosa, 309.
 Centistes, 21.
 Cephus pygmaeus, 157.
 Ceratina cærulea, 310.
 Cercyon, 459; scitum, 413.
 Cerigo texta, 286.
 Ceroptera, 316.
 Cestoidea, 380.
 Cetonia aurata, 155, 462; metallicus, querens, 462.
 Chaffinch, 291.
 Chalcis, 178.
 Cheese-hoppers, 502—504; mites, 502.
 Cheimatobia rupicapzaria, 288.
 Chiasognathus Grantii, 459.
 Chirothrips, 444.
 Chloroperla apicalis, 501.
 Chlorops circumdata, 104.
 Chrysomela 10-punctata, 153; Göttingensis, 306; rufipes, 153; sanguiniblenta, 413.
 Chrysomyia, 180.
 Cicadae, 211.
 Cicindela littoralis, 376.
 Cimbex femorata, 410.
 Cladius difformis, Geoffroyi, pallipes, 157.
 Clostera reclusa, 286.
 Clytura 4-maculata, 153.
 Cocoon, two pupæ in one, 206.
 Coccothraustes vulgaris, 291.
 Cœcus eacti, 425, 426.
 Cochineal, 425, 426.
 Coeuy, 53, 54, 108.
 Cœlioxys conica, 157, 498.
 Coleothrips, 451.
 Coleopterata, 411, 450.
 Coléoptères de Mexique, 302.
 Colias Chione, 431; Electra, 408, 410; Europome, 408; Hyale, 408, 409, 416.
 Collection, &c. des Chenilles, &c. Boisduval's, 302, 507.
 Colymbetes ater, bimaculatus, fenestralis, fuliginosus, Grapii, guttiger, oblongus, 310.
 Cordulia ænea, 151.
 Cormorant, 290.
 Corvus cornix, 292.
 Cossus ligniperda, 286.
 Cowslip, Aphis of the, 208.
 Crayfish, 294, 298.
 Cresus septentrionalis, 157.
 Crumomyia, 316.
 Crustacea, double metamorphosis of some, 370.
 Ctenophora, 179.
 Culex caspius, 432.
 Curculiones, 457.
 Curtis's British Entomology, 100, 301.
 Cyanopterus, 22.
 Cyehrus rostratus, 150.
 Cylindrotomus, 179.
 Cymindis homagrica, miliaris, 378.
 Cynips, Observations on the British, 159.
 Cynips, 166.
 Cynthia cardui, 413.
 Cystica, 380.
 Cysticercus, 399; hepatis fasciolaris, 389.
 Decapoda, 293.
 Deilephila Elpenor, 285; Euphorbia, 376; Galii, 285, 409, 410; porcellus, 285.

- Dejean's Catalogue des Coléoptères, 507; Iconographie, 102.
 De Laporte's Études Entomologique, 301.
Denns coryli, 286.
 Den-constricting spider, 214.
Destoma hepaticum, 381, 382, 399, 402; *macrostomium*, 390; *mesostomum*, 396; *polymorphum*, 401; *trichocophilus*, 400.
Desvoidy, Essai sur les Myodaires, 57.
Diaphora mendica, 286.
Diastata obscurella, 182.
Dichori, 31.
Dictenidia, 179.
Diospilus, 133.
Diptera, notes on, 178.
Dictonus calydonius, *Dama*, *obscurus*, *robustus*, *sphaerocephalus*, 177, 178.
Doreus parallelipipedus, 155.
 Double metamorphosis of some Crustacea, 370.
Drapetis aterrima, *exilis*, *flavipes*, *fuscipes*, *nigra*, 180.
Drepana hamula, 288.
Dromius sigma, 154.
Dytiscus circumflexus, 151.
 Earwigs, 411.
Echinococcus, 399.
Echinorhynchus, 399, 400.
Echium vulgare, 308.
 Eggs of *Mantis religiosa*, 178.
Elater bipustulatus, 155; *cylindricus*, 207; *noctilucus*, 108.
Elmis, 459.
Endromis versicolor, 308.
Eusina, 60.
 Entomological works, list of, 100, 505.
 Entomology of Epping, remarks on the, 147.
Entomostraca, 15.
Entozoa, 379.
Ephemera, 18, 425.
 Epitome of Thysanoptera, 439.
Epping, 149, 283.
Erastria fuscula, 287.
Eremobia ochroleuca, 287.
Erichthus, 458.
Erioptera pygmaea, 179.
Eriphia carribea, 373.
Eristalis taphicus, 413.
Essai sur les Myodaires, 57.
 Essay on Classification of Ichneumones adsciti, 20, 121.
 Etudes Entomologiques, &c. par M. de Laporte, 301.
Eubadizion, 181.
Euccila, 164.
Euleia, 81.
 Extracts of Letters from C. Darwin to Professor Henslow, 457.
 Faune Entomologique, &c., 302; de l'Oceanie, 303.
Figitæ, 163.
Filaria, 176; *Medinensis*, 382, 387, 399; *papillosa Equi*, 386.
 Fire-flies, 50, 55.
 Fish, army of, devoured by alligators, 420.
Flustra, 458.
Forellia, 64.
Fox, Arctic, 430.
Fringilla Montifringilla, 291.
Fulgora candelaria, discussion on the luminosity of, 45, 105; *laternaria*, 46, 107.
Fuligula marila, 290.
Fulmar Petrel, 431.
Galleria cereana, 414.
Ganychorus, 40.
Gearecinus carnifex, 297; *hydromodus*, 372.
 Genera des Insectes, &c. 302, 507.
 Geography and classification of animals, treatise on the, 301.
Geometra illunaria, *Julia*, 287.
Geotrupes subarmatus, 464.
 Glow-worm, 49, 407.
Gomphus vulgatissimus, 151.
Gordius aquaticus, 385, 386.
 Gory's and Percheron's Monographic des Cétoines, 302, 507.
Grammesia bilinea, *trilinea*, 287.
 Grant's outlines of comparative Anatomy, 101, 303.
Grapsus pelagicus, 374.
 Grasshopper breeding melons, 114.
 Great ash-coloured shrike, 290.
 Grey-lag goose, 291.
 Grosbeak, 291.
Gryllus italicus, 379.
Gryon, 342, 343.
 Guérin's Iconographie du Règne Animal, 102; Magasin de Zoologie, 102.
Gulls, 291.
Gymnopleurus pilularius, 377.
 Hadena lithoriza, 287; *saponariæ*, 149.
Haematopota, 425.
 Hahn's Arachniden, 102, 303; Wanzen-arten gen Insecten, 102.
 Hampstead Heath, insects found on, 91.
Hamularia lymphatica, 399.
 Handbuch der Entomologie, 303.
Hare, Polar, 430.
Harpalus aeneus, 284.
Helcon, 123, 142.
Heliothrips, 441, 443.
Hermaphrodite Polyommatus Alexis, 304.
Heriades campanularum, 157.

- Hermit crabs, 215.
 Herpysticus lasicollis, 413.
 Heteroptera, 316, 318, 334.
 Hexapoda, 15.
 Hexatoma nigra, 179.
 Hibernia capreolaria, 287.
 Hipparchia Cassiope, 409; Galathea, 150.
 Hirundo riparia, 291.
 Histoire, &c. des Insectes Diptères, 303; des Lépidoptères de France, 302; Naturelle des Crustacés, 303; Naturelle des Insectes, 101; Naturelle des Lépidoptères, &c. &c., 302, 507.
 Hobby, 291.
 Hoopoe, 292.
 Hoose in cattle, 433.
 Horned screamer, 10.
 Hudson's Bay Lemming, 430.
 Humble-bee caught by a spider, 422.
 Humble-bees, 337.
 Husk in cattle, 433.
 Hydrobii, 457.
 Hydropori, 457.
 Hygroti, 457.
 Hylobius Abietis, 308.
 Hylotoma Anglicæ, segmentaria, ustulata, 157.
 Hylurgus ater, piniperda, 308.
 Hymenoptera, nest of one of the fossorial, 413.
 Hymenopterorum, &c., Monographiæ, Nees ab Esenbeck's, 102.
 Hypericum elodes, 150.
 Hypophlaeus castaneus, 415.

 Ibalia, 168.
 Ichneumon Laricæ, 431.
 Ichneumones adsciti, essay on the, 20, 121.
 Icones Historiques des Lépidoptères d'Europe, 302, 507.
 Iconographie des Chenilles, 302, 506; des Coleoptères d'Europe, 102, 301, 507; du Règne Animal, 102, 301, 507.
 Iguana, 459.
 Illustrations of British Entomology, Stephens's, 100, 301.
 Innuus, 6.
 Inostemma, 268.
 Insect Hunter, wanderings of a, 305.
 Insects found on Hamstead-heath, 91; notes on various, 376; on the assembling of certain, 207.
 Iphitrachelus, 273.
 Isomorpha, 16.
 Issoria Lathonia, 313.

 Kestril, 291.
 King-crab, 215.
 Kirby's Bridgewater Treatise, 292.
 Kite, 291.
 Kleidotoma, 165.

 Lachnus, 405; picca, pini, quercus, 406, 407.
 Lamia lugubris, tristis, 378.
 Lampropteryx badiata, 288.
 Land-crabs, 300.
 Lanus excubitor, 290.
 Iaricæ Rossii, 432.
 Larva, Lepidopterous, 209; of Megatoma serra, 412.
 Latridius, 459.
 Leiodes, 459.
 Leiophron, 20, 21.
 Lemming, 430.
 Lépidoptères de l'Europe, 507.
 Leptura 4-fasciata, 308.
 Lestremia, 180.
 Leucoma salicis, 286.
 Leucophasia sinapis, 284.
 Libellula, 18; prrenubila, 4-maculata, 151.
 Limaria arctica, 438.
 Limnobia occulta, 179.
 Limnophila, 179.
 Limosina, 316, 318, 326.
 Limothrips, 444.
 Limulus, 215.
 Linnaean Society, Transactions of, 301.
 Liopterus oblongus, 151.
 List of Entomological works, 100.
 Listera ovata, 308.
 Lobster, 210; climbing palm-trees, 300; young, 375.
 Locality of certain forms in Natural History, 304.
 Longevity of a spider, 411.
 Lophopteryx carmelita, 286.
 Lotus corniculatus, 308.
 Loudon's Magazine of Natural History, 101, 292.
 Lucanus cervus, 155.
 Lucriol, 50.
 Lumbricus terrestris, 382.
 Luperus rufipes, 288.
 Lycoperdina Bovista, 308.
 Lyda sylvatica, 157.
 Lytæa umbrosa, 286.

 Macacus, 6.
 Machaerium maritimum, 181.
 Macquart's Insectes Diptères, 102.
 Macrocentrus, 136.
 Macroglæssa stellatarum, 416.
 Macropodia Phalangium, 371.
 Magasin de Zoologie, 102, 301, 507.
 Magazine of Natural History, Loudon's, 101, 292, 505; Philosophical, 509.
 Malachius fasciatus, 307.
 Malacostraca, 15.
 Mamestra furva, oleracea, 287.
 Mancipium Daplidice, 409.
 Mantis religiosa, eggs of, 178.

- Manual of Entomology, Shuckard's, 100, 301, 505.
 Martin, St. Ange, sur les Cirripèdes, 303.
 May-fly, 18.
Medeterus alpinus, conspersus, 181; loriopes, 414.
Megachile circumcincta, 157, 497, 498; Leachiella, 415; xanthomelana, 157.
Megalopae, 293, 371, 374, 375.
Megatoma serra, larva of, 412.
Melandria caraboides, 153.
Melanippe hastata, 288.
Melanips, 161.
Melanotriops, 441, 450.
Melitaea Euphrasyne, *Selene*, 150, 285; Tarquinias, 431.
Melou-breeding grasshopper, 114.
Melolontha Fullo, 415.
 Memoir on the Metamorphosis in *Porcellana* and *Ponticus*, 275.
 Mémoire sur les Cirripèdes, 303.
 Merlin, 291.
Merula torquata, 291.
Meteorus, 24.
Microdus, 22.
Miselia compta, 149.
Monographia Chalciditum, 94, 182, 465.
 Monographie des Braconides de Belgique, 506; des Cétoines, &c., 302, 507; des Passales, &c., 101; die Arachniden, 303.
Monostoma, 400; *ventricosum*, 390.
Mormo maura, 416.
Motacilla Boarula, 291.
Musca vomitoria, 17.
Musk ox, 431.
Mutillidae, 463.
Mycetes, 6.
Mygale avicularia, 47, 105.
Myriapoda, 15.
Myrmecion libelluloides, 461.
Myrmeleonidæ, 460—462.
Mythimna grisea, 151.
- Natural History and Metamorphosis of an anomalous Crustaceous Parasite, 452.
 Natural History, locality of certain forms in, 304.
Necromorpha, 16.
Necrophorus humator, *mortuorum*, *vespillo*, 155.
Nees ab Esenbeck Hymenopterorum, &c., *Monographia*, 102.
Nematoidea, 380.
 Nest of one of the fossorial Hymenoptera, 413.
Neuronia fusca, 157.
 New South Wales, wanderings in, 209.
Noceta, 80.
 Notes on Diptera, 178; on some insects of Teneriffe, 412; on the genus *Aphis*, 405; on various insects, 176, 376, 460.
- Notodonta carmelita*, 310.
Numenius Phœopus, 291.
- Observations on Polypi and Ascidiae, 172; on the British Cynipites, 159.
Octopoda, 15.
Ocypus morosus, 412.
Oedicnemus crepitans, 292.
Oestrices, 424.
Oestrus ovis, vitality of, 103.
Oiceoptoma thoracica, 155.
Olina, 316.
 On the species of *Teleas*, 341.
Onychia, 162.
Opatrium tomentosum, 413.
Opbrys apifera, 308.
Orechis bifolia, *maculata*, *muscula*, *morio*, 308.
Orellia, 66.
Orgilus, 143.
 Origin of Entozoa in the bodies of Animals, 379.
Orphnephila devia, 180.
Oscillatoria, 457.
Ostrich, new species of, 458.
 Outlines of Comparative Anatomy, Grant's, 101, 303.
Ox, *musk*, 431.
Oxyyna, 59.
Oxyphora, 61.
Oxyporus rufus, 308.
Oxyuris, 399.
- Pachyrhina*, 179.
Paguri, 215.
Panurgus ursinus, 150.
Papilio Podalirius, 41.
 Parasitic Hymenoptera, essay on, 20, 121.
Pea-crab, memoir on the, 85.
Pentatoma smaragdula, 413.
 Percheron's Monographie des Passales, 101.
Peridæa serrata, 310.
Perilitus, 23, 24.
Petrel, Fulmar, 431.
Philosophical Transactions, 101.
Phlaeothrips, 441.
Pholocornæ carbo, 290.
Phora abdominalis, 182.
Phryganea grandis, 157.
Phytomyza flava, 414.
 Pictet's descriptions of Nemouræ, 506.
Picus minor, 292.
Pieris Cratægi, 208.
Pimelia radula, 413.
Pinna, 88, 89.
Pinnotheres, memoir on, 85.
Pithecia, 6.
Planaria lactea, 382, 383.
Planariæ, 457.
Planetes, 178.

- Platygaster, 217, 219.
 Platypeza alterrima, atra, dorsalis, summi-pennis, holosericea, picta, 181.
 Peloibius Hermanni, 151.
 Pogonocerus nebulosus, 153.
 Polar bear, 429; hare, 430.
 Polygala vulgaris, 308.
 Polygonum multiflora, 150.
 Polymomatus Acis, 410; Agestis, 285; Alexis, 304; Argiolus, 285; Argus, 150; Corydon, 410.
 Polypi, 172.
 Polystoma pinguicula, 399.
 Pontia Napi, 284.
 Porcellana, memoir on, 275.
 Porthesia auriflua, chrysorrhœa, 286.
 Portunus, memoir on, 275.
 Prionella, 59.
 Procrustes spretus, 376.
 Professor Studer's cabinet and books, 102.
 Pselaphus, 457, 459.
 Psila pallida, rufa, 182.
 Pteromalus, 94, 182, 465.
 Ptychoptera lacustris, pectinata, 179.
 Pupa, two in one cocoon, 206.
 Pygostolus, 20.
 Pyrausta 8-maculata, 310.
 Pyrophori, 427.
 Rantus adspersus, agilis, exoletus, noctivagus, pulvrosus, 151.
 Relations of animals, remarks on the, 1.
 Remarks on the Entomology of Epping, 147, 283; on the relations of animals, 1; suggested by a postscript to the 5th Vol. of Stephens's *Mandibulata*, 170.
 Remedies for husk in cattle, 435—438.
 Reptiles, 459, 460.
 Resemblance, 8, 10.
 Review of Mr. Swainson's Preliminary Discourse, &c., notes on a, 301.
 Rhagium bifasciatum, vulgare, 288, 308.
 Rhynchites Populi, 153, 288; Rossia palpibrosa, 433.
 Rio de Janeiro, minute Insects found at, 457.
 Ross's Arctic salmon, 431; second voyage, appendix, 427.
 Rough seal, 431.
 Rusina ferruginea, 286.
 Saculina Carcini, 452.
 Sarcaria arundinacea, 291.
 Salmon, Ross's Arctic, 431.
 Saperda populnea, 153.
 Sapyga crassicornis, 415.
 Saturnia Carpini, 308; Pavonia-minor, 206.
 Scabiosa arvensis, succisa, 308.
 Scarites levigatus, Pyracmon, 177.
 Scatopse flavicollis, picca, 406.
 Scaup duck, 290.
 Scelio 342, 367; rugosulus, 415.
 Schizocerus pallipes, 157.
 Scholia biebiana, flavifrons, interrupta, 4-punctata, 463.
 Seal, rough, 431.
 Selandria alni, 157.
 Sericothrips, 443, 444.
 Series of Nature, remarks on the, 1.
 Sertularia pluma, 174; setacea, 175.
 Sesia bombyliformis, fusiformis, 308, 309.
 Shearwater, 291.
 Shuckard's Manual of Entomology, 100, 301, 505.
 Siagona Oberleitneri, 177.
 Sisyphus Schoefleri, 378.
 Sitarea, 59.
 Société Entomologique de France, Annales de la, 508.
 Soldier crabs, 215.
 Solli's Historia de la Conquesta de Mexico, 51.
 Sparasson, 342, 369; frontale, 415.
 Sparrow-hawk, 291.
 Sphenella, 73.
 Sphinx convolvuli, 285, 410, 416; Galii, 415; Ligustris, 79.
 Sphaerocera, 316, 318.
 Sphaeroceridae, British species of, 315.
 Spider catching a humble-bee, 421, 422; den-constructing, 214; longevity of a, 411.
 Spider-crab, 294.
 Squilla Desmarestii, 295.
 Staphylini, 457.
 Stauropus Fagi, 286, 310.
 Stelis aterrima, 157.
 Stenelytra, 441, 443.
 Stephens's British Entomology, 100, 301.
 Stomoxys irritans, 104.
 Strongylus armatus, 399; gigas, 399, 400.
 Stylia, 59.
 Styleps Dalii, 157.
 Suites à Bullion, 102, 303.
 Swainson on animals, 301.
 Sympetrum rufostigma, 310.
 Synchori, 35.
 System of Zoology, 505.
 Tabanites, 424.
 Tabanus, 425.
 Tableaux synoptiques des Lépidoptères, 302.
 Tachypeza arenaria, grammum, hirta, præfusio, 180.
 Tanychori, 38.
 Teleas, 341, 342, 356.
 Telenomus, 342, 345.
 Telephorus Alpinus, 153.
 Teneriffe, notes on some insects of, 412.

- Tephritis, 66; *Alciphron*, cornuta, pugionata, sonchi, 308.
 Tephritis, descriptions of the British, 57.
Terebrantia, 441, 443.
Terellia, 61.
Term, 291.
Tetraptera, 15.
Thecla rubi, W. album, 285.
Thelphusa erythrophrys, 373.
Themira pilosa, 182.
Thoron, 342, 345.
Thrips, 441, 444, 446.
Thripstes, 439.
Thyatira Batis, 410.
Thymus serpyllus, 308.
Thyanoptera, 439.
Tiphia femorata, 310.
Tipula dispar, 179.
Tenius angulatus, 396; articulata-flava, *
 382; cuneiceps, 395; gasterostei-soli-
 lida, 382; lata, 399; perlolata, 399;
 platycephala, 390; plicata, 399; so-
 lium, 399; vulgaris, 382.
Tetanus ochropus, 292.
 Tour in the Prairies, 280.
Tragopan pheasant, 10.
 Transactions of the Entomological So-
 ciety of London, 505; Linnaean So-
 ciety, 301; Zoological Society, 505.
 Transformation of insects, 12.
 Travels through Carolina, Georgia, and
 Florida, Bartram's, 417.
Trematoda, 380.
Triaspis, 124.
Trichiura cratregi, 286.
Trichius nobilis, 307.
Trichocephalus, 399.
Tricuspidaria, 399.
Trigonocephalus, 458.
Triphaena orbona, 286.
Trixa, 182.
Trox sabulosus, 155.
Tubularia indivisa, 173.
Tubulifera, 441.
Turnip-fly, 339.
Typhaeus Ionicus, 377, 464.
Vanessa Antiopa, 410, 415; *C. album*,
 285, 416.
Varieties, 206, 407.
 Various insects, notes on, 176.
Veronica montana, 150.
Verticella rotatoria, 388.
 Vitality of *Estrus ovis*, 103.
 Voyage, Appendix to Captain Sir John
 Ross's, 427.
Unicorn chitterer, 10.
Upupa Epops, 292.
Urellia, 74.
Urophora, 69.
 Wanderings in New South Wales, 209;
 of an insect hunter, 305.
 Wanzen-artigen Insecten, Hahn's, 102.
Whimbrel, 291.
Wolf, 430.
Wolverine, 429.
 Worcester, captures at, or near, 410.
 Worms in cattle, 437; intestinal, 379.
Xenomerus, 342, 355.
Xiphura, 179.
Xyphosia, 59.
Zabrus gibbus, 176, 306.
Zaraea fasciata, 157, 308.
Zele, 140.
Zeugophora flavicollis, subspinosa, 156.
Zocæ, 293.
Zygoneura, 180.

LIST OF THE GENERA AND SPECIES DESCRIBED IN THIS VOLUME.

LEOPHRONI <i>Ess.</i>	TEPHRITIS <i>Latr.</i>
PYGOSTOLUS <i>Hal.</i>	cornuta <i>Fabr.</i>
falcatus <i>Ess.</i>	Lappae <i>Meig.</i>
ANCYLUS <i>Hal.</i>	Tussilaginis <i>Fabr.</i>
ater <i>Ess.</i>	Arcii <i>De G.</i>
CENTISTES <i>Hal.</i>	UROPHORA <i>Desv.</i>
LEIOPHRON <i>Ess.</i>	Cardui <i>Linn.</i>
PERILITUS <i>Ess.</i>	pugionata <i>Meig.</i>
METEORUS <i>Hal.</i>	solstitialis <i>Linn.</i>
albitarsis <i>Ess.</i>	ACIURA <i>Desn.</i>
albiditarsus <i>Cur.</i>	Lycinidis <i>Fabr.</i>
caligatus <i>Hal.</i>	discoidea <i>Fabr.</i>
chlorophthalmus <i>Spin.</i>	SPHENELLA <i>Desv.</i>
micropterus <i>Hal.</i>	signata <i>Meig.</i>
abdominator <i>Ess.</i>	marginata <i>Linn.</i>
pendulator <i>Latr.</i>	URELLIA <i>Desv.</i>
rubens <i>Ess.</i>	radiata <i>Fabr.</i>
colon <i>Hal.</i>	ACINIA <i>Desv.</i>
cinctellus <i>Ess.</i>	corniculata <i>Fall.</i>
obfuscatus <i>Ess.</i>	parietina <i>Linn.</i>
atrator <i>Cur.</i>	laticauda <i>Meig.</i>
filator <i>Hal.</i>	leraclei <i>Linn.</i>
delator <i>Hal.</i>	Leontodontis <i>De G.</i>
vexator <i>Hal.</i>	Hyoseyami <i>Linn.</i>
profligator <i>Hal.</i>	flavicauda <i>Meig.</i>
jaculator <i>Hal.</i>	Absinthii <i>Fabr.</i>
PERILITUS	NOEETA <i>Desv.</i>
rutilus <i>Ess.</i>	guttularis <i>Meig.</i>
brevicollis <i>Hal.</i>	ANOMOIA <i>Walk.</i>
conterminus <i>Ess.</i>	Goedii <i>Meig.</i>
secalis <i>Linn.</i>	EULEIA <i>Walk.</i>
cerealis <i>Hal.</i>	Onopordinis <i>Fabr.</i>
AETHIOPS <i>Ess.</i>	ACIDIA <i>Desv.</i>
idalius <i>Hal.</i>	cognata <i>Wied.</i>
BLACUS <i>Hal.</i>	Artemisia <i>Fabr.</i>
GANYCHORUS <i>Hal.</i>	Zoë <i>Wied.</i>
pallipes <i>Hal.</i>	PTEROMALUS <i>Swed.</i>
tripudians <i>Hal.</i>	longicornis <i>Walk.</i>
ruficornis <i>Ess.</i>	subniger <i>Walk.</i>
diversicornis <i>Ess.</i>	latipennis <i>Walk.</i>
ambulans <i>Hal.</i>	imbutus <i>Walk.</i>
BLACUS <i>Ess.</i>	mediocris <i>Walk.</i>
ENSINA <i>Desv.</i>	spicatus <i>Walk.</i>
sonchi <i>Linn.</i>	BLACUS <i>Ess.</i>
OXYPHORA <i>Desv.</i>	hastatus <i>Hal.</i>
Westermanni <i>Meig.</i>	humilis <i>Ess.</i>
TERELLIA <i>Desv.</i>	paganus <i>Hal.</i>
serratulae <i>Linn.</i>	trivialis <i>Hal.</i>
Alciphron <i>Neum.</i>	HELCON <i>Ess.</i>
fluorescentiae <i>Linn.</i>	TRIASPIS <i>Hal.</i>
FORELLIA <i>Desv.</i>	lepidus <i>Hal.</i>
Arnicae <i>Linn.</i>	caudatus <i>Ess.</i>
ORELLIA <i>Desv.</i>	obscurellus <i>Ess.</i>
Wiedemannia <i>Meig.</i>	

LIST OF GENERA AND SPECIES.

fulvipes *Hal.*
ambiguus *Ess.*
CALYPTUS *Hal.*
fasciatus *Ess.*
puher *Hal.*
tibialis *Hal.*
EUBADIZON *Ess.*
semistriatus *Hal.*
flavipes *Hal.*
pectoralis *Ess.*
DIOSPILUS *Hal.*
oleraceus *Hal.*
speculator *Hal.*
MACROCENTRUS *Cur.*
linearis *Ess.*
thoracicus *Ess.*
marginator *Ess.*
infirmus *Ess.*
picipes *Hal.*
collaris *Spin.*
ZELE *Cur.*
testaceator *Cur.*
chlorophthalmus *Ess.*
ORGILUS *Hal.*
obscurator *Ess.*

ÆGILIPS *Hal.*
MELANIPS *Hal.*
ONYCHIA *Hal.*
FIGITES *Latr.*
EUCOILA *West.*
KLEIDOTOMA *West.*
CYNIPS *Linn.*
IBALIA *Latr.*
ALLOTRIA *West.*

PLANETES *Walk.*
extremus *Walk.*
BOLITOPHILA *Meig.*
maculipennis *Walk.*
TACHYPEZA *Meig.*
arenaria *Hal.*
 β ? *alata.*
prælusio *Walk.*
hirta *Walk.*
PLATYPEZA *Meig.*
funipennis *Walk.*
aterrima *Walk.*

PTEROMALUS *Swed.*
junceus *Walk.*
filicornis *Walk.*
muscarum *Linn.*
basalis *Walk.*
decisus *Walk.*
lautus *Walk.*
infectus *Walk.*
placidus *Walk.*
impeditus *Walk.*
ovatus *Walk.*
contractus *Walk.*
linearis *Walk.*
formosus *Walk.*

fuliventris *Walk.*
tricolor *Walk.*
maculipennis *Walk.*
rufiventris *Walk.*
transiens *Walk.*
grandiclava *Walk.*
congruus *Walk.*
fucicola *Walk.*
nubilipennis *Walk.*
apicalis *Walk.*
hemipterus *Walk.*
cingulipes *Walk.*
albipennis *Walk.*
plenus *Walk.*
solutus *Walk.*
berylli *Walk.*
thoracicus *Walk.*
cupreus *Walk.*
mesochlorus *Walk.*
puparum *Linn.*
omnivorus *Walk.*
lugubris *Walk.*
nigro-aeneus *Walk.*

PLATYGASTER *Latr.*

Catilus *Walk.*
Tipulæ *Kirby.*
Nydia *Walk.*
Laodice *Walk.*
Nice *Walk.*
Osaces *Walk.*
ventralis *West.*
Craterus *Walk.*
Sosis *Walk.*
Rhanis *Walk.*
Myles *Walk.*
Seron *Walk.*
Mamertes *Walk.*
Tarsa *Walk.*
Jasius *Walk.*
Acco *Walk.*
Euryale *Walk.*
Halia *Walk.*
Abaris *Walk.*
Ozines *Walk.*
Trebius *Walk.*
scutellaris *Ess.*
Leptines *Walk.*
Larides *Walk.*
Nereus *Walk.*
Triticci *Hal.*
Roboris *Hal.*
Furius *Walk.*
scelionoides *Hal.*
Belus *Walk.*
filicornis *Hal.*
Crates *Walk.*
Otreas *Walk.*
Prorsa *Walk.*
Abas *Walk.*
Pisis *Walk.*
Remulus *Walk.*
Didas *Walk.*

LIST OF THE GENERA AND SPECIES

ruficornis <i>Latr.</i>	Mellicerta <i>Walk.</i>
Erato <i>Walk.</i>	Lycon <i>Walk.</i>
Matuta <i>Walk.</i>	Menippus <i>Walk.</i>
Cotta <i>Walk.</i>	scrutator <i>Hal.</i>
Rutubus <i>Walk.</i>	areolata <i>Hal.</i>
ensifer <i>West.</i>	Atinas <i>Walk.</i>
Acerius <i>Walk.</i>	Mecrida <i>Walk.</i>
elongatus <i>Hal.</i>	IPIPITRACHELUS <i>Hal.</i>
attenuatus <i>Hal.</i>	Lar <i>Hal.</i>
Gyge <i>Walk.</i>	PLATYGASTER <i>Latr.</i>
Munitus <i>Walk.</i>	cochlearius <i>Hal.</i>
Tisia <i>Walk.</i>	Hyllus <i>Walk.</i>
Cyrsilus <i>Walk.</i>	—
Pelias <i>Walk.</i>	SPHÆROCERA <i>Latr.</i>
Vænia <i>Walk.</i>	subsultans <i>Fabr.</i>
Œbalus <i>Walk.</i>	monilis <i>Hal.</i>
Demades <i>Walk.</i>	vaporariorum <i>Hal.</i>
Orcus <i>Walk.</i>	denticulata <i>Meig.</i>
Chrysippus <i>Walk.</i>	scabriula <i>Hal.</i>
Gorge <i>Walk.</i>	BORBORUS <i>Meig.</i>
Iolas <i>Walk.</i>	nitidus <i>Meig.</i>
Gænus <i>Walk.</i>	suillorum <i>Hal.</i>
Otanes <i>Walk.</i>	niger <i>Meig.</i>
Pleuron <i>Walk.</i>	equinus <i>Fall.</i>
Sonchis <i>Walk.</i>	nigrafemoratus <i>Macq.</i>
Taras <i>Walk.</i>	flavipennis <i>Hal.</i>
Orus <i>Walk.</i>	longipennis <i>Hal.</i>
Dictys <i>Walk.</i>	vitripennis <i>Meig.</i>
Philinna <i>Walk.</i>	ater <i>Meig.</i>
Cratinus <i>Walk.</i>	APTERINA <i>Macq.</i>
Olorus <i>Walk.</i>	pedestris <i>Meig.</i>
Sterope <i>Walk.</i>	LIMOSINA <i>Macq.</i>
Cebes <i>Walk.</i>	silvatica <i>Meig.</i>
Deipylo <i>Walk.</i>	limosa <i>Fall.</i>
Eriphylo <i>Walk.</i>	humida <i>Hal.</i>
Evadne <i>Walk.</i>	arcuata <i>Macq.</i>
Œclus <i>Walk.</i>	geniculata <i>Macq.</i>
Bucolion <i>Walk.</i>	crassimana <i>Hal.</i>
Abia <i>Walk.</i>	ochripes <i>Meig.</i>
Oscus <i>Walk.</i>	scutellaris <i>Hal.</i>
Lysicles <i>Walk.</i>	nivalis <i>Hal.</i>
Vestinus <i>Walk.</i>	quisquilia <i>Hal.</i>
Nitus <i>Walk.</i>	fungicola <i>Hal.</i>
Ægeus <i>Walk.</i>	erratica <i>Hal.</i>
Ennius <i>Walk.</i>	clunipes <i>Meig.</i>
Minthe <i>Walk.</i>	spinipennis <i>Hal.</i>
Cleodaeus <i>Walk.</i>	heteroneura <i>Hal.</i>
Abisares <i>Walk.</i>	fuscipennis <i>Hal.</i>
niger <i>Ess.</i>	vagans <i>Hal.</i>
Manto <i>Walk.</i>	lugubris <i>Hal.</i>
Strato <i>Walk.</i>	Zosteria <i>Hal.</i>
Laricis <i>Hal.</i>	leucoptera <i>Hal.</i>
Euhemerus <i>Walk.</i>	nigerrima <i>Hal.</i>
Athamas <i>Walk.</i>	melanica <i>Hal.</i>
Plotinus <i>Walk.</i>	HETEROPTERA <i>Macq.</i>
Pedasus <i>Walk.</i>	pusilla <i>Fall.</i>
Zosine <i>Walk.</i>	—
Dryope <i>Walk.</i>	BOEUS <i>Hal.</i>
inermis <i>Hal.</i>	seminulum <i>Hal.</i>
Sagana <i>Walk.</i>	GRYON <i>Hal.</i>
Ilione <i>Walk.</i>	Nanno <i>Walk.</i>
INOSTEMMA <i>Hal.</i>	Phlias <i>Walk.</i>
Boscii <i>Jur.</i>	Matuta <i>Walk.</i>

DESCRIBED IN THIS VOLUME.

<i>misellus Hal.</i>	<i>SCELIO Latr.</i>
TELENOMUS Hal.	<i>rugosulus Latr.</i>
<i>Eris Walk.</i>	SPARASION Latr.
<i>Cebes Walk.</i>	<i>frontale Latr.</i>
<i>Othus Hal.</i>	
<i>Laricis Hal.</i>	
<i>heteropterus Hal.</i>	CERCYON Leach.
<i>Zethos Walk.</i>	<i>scitum Walk.</i>
<i>Phylas Walk.</i>	APHODIUS Ill.
<i>Dorsennus Walk.</i>	<i>fortunatus Walk.</i>
<i>Andria Walk.</i>	
<i>Tritia Walk.</i>	PHLÆOTHIRIPS Hal.
<i>Horus Walk.</i>	<i>pedicularia Hal.</i>
<i>brachialis Hal.</i>	<i>aculeata Fabr.</i>
<i>Stilpo Walk.</i>	<i>ulmi Fabr.</i>
<i>Othonia Walk.</i>	<i>flavipes Hal.</i>
<i>Vinicio Walk.</i>	<i>Statice Hal.</i>
<i>Cleostratus Walk.</i>	<i>coriacea Hal.</i>
<i>Orphne Walk.</i>	<i>annulicornis Hal.</i>
<i>Situs Walk.</i>	HELIOTHIRIPS Hal.
<i>Trophonius Walk.</i>	<i>Adonidum Hal.</i>
<i>Pilumnus Walk.</i>	SERICOTHRIPS Hal.
<i>Belenus Walk.</i>	<i>staphylinus Hal.</i>
<i>Alcon Walk.</i>	THRIPS Linn.
<i>Turesis Walk.</i>	CHIROTHRIPS Hal.
<i>Colotes Walk.</i>	<i>manicata Hal.</i>
<i>Nauplius Walk.</i>	LIMOTHIRIPS Hal.
<i>Aethre Walk.</i>	<i>denticornis Hal.</i>
THORON Hal.	<i>cerealium Hal.</i>
<i>metallicus Hal.</i>	APTINOTHRIPS Hal.
XENOMERUS Walk.	<i>rufa Gleich.</i>
<i>Ergenaa Walk.</i>	<i>nitidula Hal.</i>
TELEAS Latr.	THRIPS Linn.
<i>varicornis Latr.?</i>	<i>Ulicis Hal.</i>
<i>Metabus Walk.</i>	<i>phalerata Hal.</i>
<i>elatior Hal.</i>	<i>obscura Hal.</i>
<i>Lycaon Walk.</i>	<i>ulmiflorum Hal.</i>
<i>Therycides Walk.</i>	<i>atra Hal.</i>
<i>Cephisus Walk.</i>	<i>vulgatissimi Hal.</i>
<i>Galba Walk.</i>	<i>Cynorrhodi Hal.</i>
<i>Aratus Walk.</i>	<i>grossulariae Hal.</i>
<i>Doto Walk.</i>	<i>physapus Linn.</i>
<i>Glaucus Walk.</i>	<i>fuscipennis Hal.</i>
<i>ephippium Hal.</i>	<i>Ericæ Hal.</i>
<i>flavipes Hal.</i>	<i>Urticæ Schr.</i>
<i>Mermerus Walk.</i>	<i>corymbiferarum Hal.</i>
<i>Chesias Walk.</i>	<i>minutissima Linn.</i>
<i>Xenetus Walk.</i>	<i>discolor Hal.</i>
<i>Paula Walk.</i>	<i>livida Hal.</i>
<i>Chyllene Walk.</i>	<i>Primulæ Hal.</i>
<i>Ægle Walk.</i>	<i>decora Hal.</i>
<i>Bassus Walk.</i>	<i>dispar Hal.</i>
<i>Asramanes Walk.</i>	<i>brevicornis Hal.</i>
<i>Medon Walk.</i>	<i>subaptera Hal.</i>
<i>clavicornis Latr.</i>	<i>pallens Hal.</i>
<i>Brasilas Walk.</i>	BELOTHRIPS Hal.
<i>Æcyra Walk.</i>	<i>acuminata Hal.</i>
<i>Æmerdis Walk.</i>	MELANTHRIPS Hal.
<i>Lamis Walk.</i>	<i>obesa Hal.</i>
<i>apricans Hal.</i>	ÆOLOTHRIPS Hal.
<i>Frocris Walk.</i>	COLEOTHRIPS Hal.
<i>Timareta Walk.</i>	<i>fasciata Linn.</i>
<i>oulex Hal.</i>	<i>vittata Hal.</i>

LIST OF GENERA AND SPECIES.

ÆLOLTHRIPS Hal.
albicincta Hal.

PTEROMALUS Swed.

bellus Walk.
chloris Walk.
constans Walk.
cliens Walk.
impar Walk.
brevivitta Walk.
illudens Walk.
pulchripes Walk.
continuus Walk.
collaris Walk.
nanus Walk.
discolor Walk.
gaudens Walk.
incertus Walk.
laticornis Walk.
chalcomelas Walk.
terminalis Walk.
compressus Walk.
gracilis Walk.
dorsalis Walk.
subquadratus Walk.
attenuatus Walk.
signatus Walk.
mundus Walk.
amplus Walk.
divisus Walk.
cephalotes Walk.
servulus Walk.
cupterus Walk.
rusticus Walk.
diversus Walk.

conifer Walk.
sobrius Walk.
fuscicornis Walk.
thalassinus Walk.
bifrons Walk.
epimelas Walk.
confinis Walk.
exilis Walk.
stenotelus Walk.
chrysammus Walk.
concisus Walk.
balux Walk.
pervagus Walk.
hilaris Walk.
orbiculatus Walk.
fulvipes Walk.
longulus Walk.
chrysos Walk.
corces Walk.
vitripennis Walk.
obscuratus Walk.
gentilis Walk.
inclusus Walk.
caligatus Walk.
conterminus Walk.
amabilis Walk.
equestris Walk.
simulans Walk.
Endomychi Curt.

ÆNIGMA Newm.
Iris Newm.
CHLOROPERLA Newm.
apicalis Newm.

END OF VOL. III.

Indian Agricultural Research Institute (Pusa)
LIBRARY, NEW DELHI-110012

This book can be issued on or before

Return Date	Return Date

